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U. S. COAST AND GEODETIC SURVEY
E. LESTER JONES, SUPERINTENDENT

HYPSONOMETRY

PRECISE LEVELING IN THE UNITED STATES

1900-1903

WITH A READJUSTMENT OF THE LEVEL NET

AND

RESULTING ELEVATIONS

BY

JOHN F. HAYFORD

**Inspector of Geodetic Work
Assistant, Coast and Geodetic Survey**

APPENDIX No. 8—REPORT FOR 1903

(REPRINTED IN PART)



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PRECISE LEVELING IN THE UNITED STATES, 1900-1903, WITH A READJUSTMENT OF THE LEVEL NET AND RESULTING ELEVATIONS.

By JOHN F. HAYFORD, *Inspector of Geodetic Work; Assistant, Coast and Geodetic Survey.*

INTRODUCTION.

This publication first appeared as Appendix No. 3 of the Report of the Superintendent of the Coast and Geodetic Survey for the year 1903.

It contained much detailed information regarding the lines of precise levels which had been established in the United States since the publication of the preceding report on precise leveling in 1899. It also contained a description of the new level, a discussion of the errors of leveling, and other matter of more or less general information. In addition, it contained detailed data relative to the general level net adjustment of which it is a report, with the resulting elevations and the descriptions of many bench marks.

The first edition of Appendix 3, Report for 1903, is exhausted, and this reprint of only a portion of the original has been made in order that the descriptions contained therein and which have not been printed in any other publication of the Survey, may be available to those who may wish to use the bench marks in engineering, scientific, or other work.

No changes have been made in the numbering of those pages of Appendix 3, Report of 1903, which contain the descriptions of bench marks. Changes have been made in the index which simplify it and make it applicable only to the descriptions contained herein. The index has been placed after the descriptions, while in the original it was before them.

Data received at this office since the appearance of the original publication made it desirable to change some of the descriptions in order to make them conform to the changes in topographic features in the vicinity of a bench mark. Only a very small percentage of the descriptions have had any changes made in them.

The Superintendent of the Coast and Geodetic Survey will welcome any information in regard to the condition of any bench mark visited with notes to be added to the descriptions contained in this volume in order to make them of greater value, when again published, in enabling one to recover the bench marks. Notice of the destruction of a bench mark is also desired in order that the files at this office may be complete.

The elevations of the bench marks, of which descriptions are given herein, are contained in Special Publication No. 18 of the Survey, entitled, "Fourth General Adjustment of Precise Level Net in the United States and Resulting Standard Elevations." That report may be obtained direct from the Superintendent of Documents, Government Printing Office, Washington, D. C. Its cost is 40 cents.

E. LESTER JONES,
Superintendent.

JULY 26, 1917.

[FROM THIS POINT ON TO PAGE 809, INCLUSIVE, IS REPRODUCED DATA, PAGE FOR PAGE, AS PRINTED IN APPENDIX 3, REPORT OF THE SUPERINTENDENT OF THE COAST AND GEODETIC SURVEY, 1903.]

DESCRIPTION OF BENCH MARKS.*

GENERAL NOTES DESCRIBING DIFFERENT FORMS AND MARKINGS OF BENCH MARKS CONNECTED WITH THE LEVEL NET.

NOTE 1.—A bench mark referred to this note is a horizontal chisel mark cut in the end of a copper or brass bolt leaded horizontally into a stone or brick wall, lettered

U S C
 ⊖
 & G S

NOTE 2.—A bench mark referred to this note is the top of a copper or brass bolt leaded vertically into stone or brick, lettered as indicated in note 1 above.

NOTE 3.—A bench mark referred to this note is the bottom of a square hole cut in stone, lettered

U S
 □
 B M

NOTE 4.—A bench mark referred to this note is the bottom of a square hole cut in stone, lettered

U S C
 □
 & G S

NOTE 5.—A bench mark referred to this note is the bottom of a square hole cut in brick or stone, or a square cut on stone, not lettered or lettering not given.

NOTE 6.—A bench mark referred to this note is the bottom of a square hole cut in the top of a limestone post, 30 to 40 inches long, set with not more than 7 inches projecting above the surface of the ground, lettered

U S
 □
 B M

* Any person who finds that one of the bench marks here described is disturbed, or that the description no longer fits the facts, is requested to send such information to the Superintendent, U. S. Coast and Geodetic Survey, Washington, D. C.

NOTE 7.—A bench mark referred to this note is the top of a copper bolt, leaded vertically into stone or brick, at the intersection of two lines, not lettered or not described as lettered.

NOTE 8.—A bench mark referred to this note is the intersection of two lines cut in the top of a copper bolt leaded horizontally into stone or brick, not lettered or not described as lettered.

NOTE 9.—A bench mark referred to this note is the bottom of a square hole cut in the top of a limestone post, 30 to 36 inches long, set with not more than 7 inches projecting above the surface of the ground and lettered

U S

□

B M

There is also a sub-bench mark, which is the intersection of two lines cut in the end of a copper bolt leaded in a face of the post.

NOTE 10.—A bench mark referred to this note is the top of a copper bolt, leaded vertically into stone or brick, at the intersection of two lines, lettered

U S

⊕

B M

NOTE 11.—A bench mark referred to this note is the bottom of a square, 1 by 1 by $\frac{1}{4}$ inches, cut in the top of a Wyoming sandstone post $4\frac{1}{2}$ feet long, with the upper 6 inches dressed to 6 by 6 inches, lettered

U S

□

B M

NOTE 12.—A bench mark referred to this note is the bottom of a square hole cut in the top of a Texas limestone post, 30 to 40 inches long, with the upper 6 inches dressed, projecting 5 to 8 inches out of the ground, lettered

U S

□

B M

NOTE 13.—A bench mark referred to this note is the intersection of two lines cut in the end of a copper bolt leaded horizontally into stone or brick, lettered

U S

⊕

B M

NOTE 14.—A bench mark referred to this note is the bottom of a square hole, $1\frac{1}{4}$ by $1\frac{1}{4}$ by $\frac{1}{4}$ inches, cut in the top of an Indiana Bedford limestone post $4\frac{1}{2}$ feet long, with the upper 6 inches dressed to 6 by 6 inches, lettered

U S

□

B M

NOTE 15.—A bench mark referred to this note is an Indiana Bedford limestone post.

NOTE 16.—A bench mark referred to this note is described as a copper bolt leaded into stone or brick.

NOTE 17.—A bench mark referred to this note is the bottom of a square hole, 1 by 1 by $\frac{1}{4}$ inches, cut in the top of Indiana Bedford limestone post, $4\frac{1}{2}$ feet long, set at least 4 feet in the ground, usually 6 inches by 7 or 8 inches in section except the upper 6 inches which is dressed to 6 by 6 inches, lettered

U S

□

B M

NOTE 18.—About the time that the line Dobbs Ferry to Greenbush was completed, the railroad company had all the mileposts (except between Rensselaer and Troy) removed, with the intention of putting in new stone ones. These new mileposts are to be about $20\frac{1}{2}$ rails (rails 30 feet long) south of where the old ones were. Therefore, in all descriptions of bench marks referred to this note the old mileposts are meant, and the distances stated must be corrected by $20\frac{1}{2}$ rails to refer them to the new mileposts.

NOTE 19.—A bench mark referred to this note is the intersection of two lines cut in the top of an iron fish-plate bolt set vertically in stone, not lettered (established by the New York Central and Hudson River Railroad engineers).

NOTE 20.—A bench mark referred to this note is a hole drilled in stone surrounded by a Δ . In 1902 the surface at the highest point in the triangle was made smooth and marked with a faint cross to indicate the point used.

NOTE 21.—A bench mark referred to this note is the top of a round-headed fish-plate bolt set vertically in a rock (established by the New York Central and Hudson River Railroad engineers).

NOTE 22.—A bench mark referred to this note is at a triangulation station. The station is marked by the point of a spike projecting from a pipe filled with concrete covered with one-half inch of cement. The bench mark is the bottom of a square hole cut in the cement near the station.

NOTE 23.—A bench mark referred to this note is one established by the United States Geological Survey,* and is an iron post with a cap on which is stamped the approximate elevation in feet. The number which is a part of the name assigned to the bench mark in this publication is this elevation.

NOTE 24.—A bench mark referred to this note is one established by the United States Geological Survey,* and is the intersection of two lines on a bronze tablet marked with the approximate elevation in feet. The number which is part of the name assigned to the bench mark in this publication is this elevation.

NOTE 25.—A bench mark referred to this note is one established by the United States Geological Survey,* and is a copper bolt marked "U. S. G. S. B. M.," with the approximate elevation in feet. The number which is part of the name assigned to the bench mark in this publication is this elevation.

NOTE 26.—A bench mark referred to this note is one established by the United States Geological Survey,* and is an iron post with a bronze cap stamped with the approximate elevation in feet and the letters M. C. The number which is a part of the name assigned to this bench mark in this publication is this elevation.

NOTE 27.—A bench mark referred to this note is one established by the United States Geological Survey,* and is the intersection of two lines on a bronze tablet marked with the approximate elevation in feet and the letters M. C. The number

*See illustration on p. 550, Appendix 8, Report for 1899. Also U. S. Geological Survey Report, 1896-97, Part I, pp. 226-228.

which is a part of the name assigned to the bench mark in this publication is this elevation.

NOTE 28.—A bench mark referred to this note is one established by the United States Geological Survey,* and is a copper bolt marked "M. C.," with the approximate elevation in feet. The number which is a part of the name assigned to the bench mark in this publication is this elevation.

NOTE 29.—A bench mark referred to this note is a three-eighths-inch copper bolt leaded into a vitrified tile, 18 by 18 by 4 inches, buried 3 to 3½ feet below the surface of the ground. Surrounding the bolt on the surface of the tile is the inscription "Mississippi River Commission, 1898, U. S., P. B. M." On top of the tile is placed a 4-inch wrought-iron gas pipe, 4 feet long, concentric with the copper bolt. The lower end of the pipe is split into quarters and spread out to prevent the pipe from heaving by frost or being pulled up. A cast brass cap fits over the top of the pipe and is riveted thereto. The cap has the following inscription in sunken letters: "Mississippi River Commission, \$250 fine for disturbing this mark. 1898. P. B. M., U. S. Latitude, ——. Longitude, ——. Elevation above sea, ——."

NOTE 30.—A bench mark referred to this note is one established by the United States Geological Survey,* and is an iron post with a cap on which is marked the approximate elevation in feet, followed by *Morehead*, *Morehed*, or *Mored* and the date 1898 or 1899. The number which is a part of the name assigned to the bench mark in this publication is this elevation.

NOTE 31.—A bench mark referred to this note is at the end of a primary base line, upon a limestone block, embedded in concrete, approximately 2 by 2 feet in cross section and 1 foot in height, weighing six or seven hundred pounds. In the center of the top surface is the bronze station mark, and the surface of the 37-millimeter center of this is the bench mark. On the space between the inner and outer circles of the station mark the letters U. S. C. & G. S. are cast.

NOTE 32.—A bench mark referred to this note is the bottom of a square hole cut in the top of a 6 by 6 inch (stone) monument, or marking stone, usually granite, set flush or almost flush with the ground.

NOTE 33.—A bench mark referred to this note is the top of a wire nail of varying size driven vertically into a root of a tree or a bench cut on a root.

NOTE 34.—A bench mark referred to this note is the bottom of a square hole cut in the top of a limestone post, 6 inches square at the top, 4½ feet long, set about 4 feet into the ground, marked

U S
□
B M

NOTE 35.—A bench mark referred to this note is at the intersection of two lines cut in end of a half-inch copper bolt 2½ inches long, set vertically or horizontally. Some are set in brick or stone by wrapping the bolt with sheet lead and firmly tamping into the hole. Others were driven in a hole, the size of the bolt, drilled in hard rock. Bolt unmarked or marked as follows:

U S
+
B M
U + S, B + M,

* See illustration on p. 550, Appendix 8, Report for 1899. Also U. S. Geological Survey Report, 1896-97, Part I, pp. 226-228.

NOTE 36.—A bench mark referred to this note is the bottom of a square hole cut in the top of a Texas limestone post about 36 inches long, with upper 6 inches dressed to 6 inches square, lettered

U S
□
B M

NOTE 37.—A bench mark referred to this note is a copper bolt on the Baltimore and Ohio Railroad line.

NOTE 38.—A bench mark referred to this note is the top of a section of rail set vertically in the ground, between the tracks, unless otherwise noted.

NOTE 39.—A bench mark referred to this note is a cross on the top of a section of rail set vertically in the ground, between the tracks, unless otherwise noted.

NOTE 40.—A bench mark referred to this note is the bottom of a square hole cut in the top of a limestone post, with upper 6 inches dressed to 6 by 6 inches, and marked

U S
□
B M

NOTE 41.—Bench marks referred to this note were established by the Board on Deep Waterways in 1900 and recovered by the New York State Engineer in 1900 and 1901. For convenience they are designated by their numbers in the report of the New York State Engineer for 1901. When the descriptions in the two publications differ, the phraseology of each is given. The abbreviation D. W. refers to the report of the Board on Deep Waterways, 1900, and N. Y. to the report of the New York State Engineer and Surveyor, 1901.

NOTE 42.—A bench mark referred to this note is a cross in a circle on the top of the coping, between the ends of the anchor of a gate of a lock.

NOTE 43.—A bench mark referred to this note is a cross in a circle, marked B. M., on the top of coping.

NOTE 44.—A bench mark referred to this note is a cross in a circle, marked B. M., on a projection in the stone wall of a lock or in a ledge of rock.

NOTE 45.—A bench mark referred to this note is the top of a copper plug between the anchor irons of a lock gate.

NOTE 46.—A bench mark referred to this note is one established by the United States Geological Survey,* and is a *bronze* tablet marked with the approximate elevation in feet, and "Harrisburg 1899." The number which is part of the name assigned to the bench mark in this publication is this elevation.

NOTE 47.—A bench mark referred to this note is similar to the one described in note 46, except the tablet is *aluminum* and marked "Dunkirk 1899."

NOTE 48.—A bench mark referred to this note is similar to the one described in note 46, except the tablet is *aluminum* and marked "Pittsburg 1899," or "Pittsburg 1902."

NOTE 49.—A bench mark referred to this note is similar to the one described in note 46, marked "Albany 1900."

* See illustration on p. 550, Appendix 8, Report for 1899. Also U. S. Geological Survey Report, 1896-97, Part I, pp. 226-228.

NOTE 50.—A bench mark referred to this note is similar to the one described in note 46, except the tablet is *aluminum* and marked "Harrisburg 1899."

NOTE 51.—A bench mark referred to this note is similar to the one described in note 46, except the tablet is *aluminum* and marked "Albany 1901."

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN BRAINERD AND LAKE
ITASCA, MINN.

(See Report of Chief of Engineers for 1901, Supplement, pp. 112-120.)

P. B. M. Δ North Base (Brainerd Base Line).—*Brainerd, Minn.* (See App. 8, Report for 1899, p. 783.)

P. B. M. Δ 1.—*Brainerd, Minn.* (See App. 8, Report for 1899, p. 783, and note 29, p. 583 of this report.)

T. B. M. 201.—Is nail in root of 10-inch jack pine, 15 meters north of Δ North Base, *Brainerd, Minn.*

T. B. M. 3.—A 20-penny wire nail in west root of 12-inch pine stump about 11 meters east of center of Brainerd and Northern Minnesota Railway track and 35 meters south of road crossing, and about 400 meters south of signboard at *Leaks, Minn.*

T. B. M. 5.—A 20-penny wire nail in top of a 14-inch pine stump $7\frac{1}{2}$ meters east of center of track of Brainerd and Northern Minnesota Railway, 250 meters south of milepost 6, and about 2 miles from *Leaks, Minn.*

T. B. M. 6.—A nail in root of burnt stump 7 meters east of center of track of Brainerd and Northern Minnesota Railway, opposite whistling post, and about 680 meters north of milepost 6; about $1\frac{3}{4}$ miles from *Merrifield, Minn.*

P. B. M. Merrifield.—A tile and pipe on west edge of right of way of Brainerd and Northern Minnesota Railway at *Merrifield* station and post-office, at east end of Long Lake. It is $12\frac{1}{2}$ meters west of center of track, 78 meters south of store end of post-office building belonging to Ernest Miles, 175 meters north of south end of Merrifield siding, one-fourth mile north of milepost 8 from Brainerd. A 16-inch jack pine bearing T. B. M. 8 stands 6 meters west; an 18-inch Norway pine stands 6 meters north-west, both blazed with triangle facing the pipe. (See note 29, p. 583.)

T. B. M. 10.—A 10-penny wire nail in north root of 12-inch jack pine standing 18 meters east of center of track of Brainerd and Northern Minnesota Railway, about 900 meters north of milepost 9, and about $1\frac{1}{2}$ miles from *Merrifield, Minn.*

T. B. M. 13.—A wire nail in root of 16-inch jack pine 20 meters west of center of track of Brainerd and Northern Minnesota Railway and opposite the third telegraph pole north of milepost 11, about 2 miles from *Hubert, Minn.*

T. B. M. 14.—A wire nail in root of 13-inch jack pine 14 meters north of center of track of Brainerd and Northern Minnesota Railway, 85 meters west of milepost 12, and about 1 mile from *Hubert, Minn.* Tree blazed with triangle over the nail.

T. B. M. 16.—A wire nail in root of small oak tree at *Hubert, Minn.*, 16 meters west of center of track of Brainerd and Northern Minnesota Railway and 17 meters south of section house.

T. B. M. 18.—A wire nail in stump 5 meters west of center of track of Brainerd and Northern Minnesota Railway, 127 meters north of milepost 15, on north side of farm road crossing, about 2 miles from *Hubert, Minn.*

T. B. M. 20.—A wire nail in top of 2-foot pine stump 20 meters west of center of track of Brainerd and Northern Minnesota Railway, about 150 meters north of road crossing and 1 000 meters south of milepost 17, and about 5 miles from *Pequot, Minn.*

T. B. M. 21.—A wire nail in root of burnt pine stump 15 meters east of center of track of Brainerd and Northern Minnesota Railway, at south end of cut and 385 meters north of milepost 17, and about 4 miles south of *Pequot, Minn.*

T. B. M. 22.—A wire nail in southwest root of 15-inch pine tree 35 meters east of center of track of Brainerd and Northern Minnesota Railway, and distant one-third length of fill from its south end. It is about 750 meters north of milepost 18 and about $2\frac{3}{4}$ miles south of *Pequot, Minn.*

T. B. M. 23.—A wire nail in west root of a double jack pine 16 meters west of center of track of Brainerd and Northern Minnesota Railway, 378 meters south of milepost 20, and about $1\frac{1}{2}$ miles south of *Pequot, Minn.* Tree is blazed on east (or track) side.

T. B. M. 24.—A wire nail in southwest root of double Norway pine at *Pequot, Minn.* It stands 37 meters east of center of track of Brainerd and Northern Minnesota Railway, and 20 meters south of old station, at rear of A. L. Cole's store and post-office.

P. B. M. *Pequot*.—A tile and pipe in the northeast corner of the yard of Alfred Lawrence in the village of *Pequot, Minn.* It is on the south side of the street leading west from A. L. Cole's store and post-office. Pipe is 57 meters west of the center of track of Brainerd and Northern Minnesota Railway. (See note 29, p. 583.)

T. B. M. 26.—A wire nail in north root of stump 4 meters west of center of track of Brainerd and Northern Minnesota Railway, at south end of long fill and north end of long cut, 274 meters north of milepost 23, about 2 miles north of *Pequot, Minn.*

T. B. M. 28.—A wire nail in burnt pine stump 11 meters west of center of track of Brainerd and Northern Minnesota Railway and 9 meters north of center of water tank at *Jenkins, Minn.*

T. B. M. 30.—A wire nail in root of poplar tree 40 meters west of center of Brainerd and Northern Minnesota Railway track and opposite sixth telegraph pole north of milepost 26, about 4 miles south of *Pine River, Minn.*

T. B. M. 31.—A wire nail in east root of lone 12-inch poplar tree 20 meters west of center of track of Brainerd and Northern Minnesota Railway and opposite milepost 27, about $3\frac{1}{4}$ miles south of *Pine River, Minn.*

T. B. M. 32.—A wire nail in east root of 14-inch jack pine 17 meters west of center of track of Brainerd and Northern Minnesota Railway, opposite milepost 28, 35 meters south of road crossing, 318 meters south of south end of railroad trestle over Pine River, and about $2\frac{1}{4}$ miles south of *Pine River, Minn.* Tree blazed with triangle over nail.

T. B. M. 33.—A wire nail in stump 5 meters west of center of track of Brainerd and Northern Minnesota Railway, 640 meters south of the trestle over Norway Brook, and halfway between mileposts 29 and 30, about a mile south of *Pine River, Minn.*

T. B. M. 35.—A wire nail in west root of 14-inch jack pine in the village of *Pine River, Minn.* It is near wagon road 16 meters east of center of track of Brainerd and Northern Minnesota Railway, 215 meters north of railway station, and 180 meters south of section house.

P. B. M. Pine River.—A tile and pipe in the village of *Pine River, Minn.* It is 15 meters west of center of track of Brainerd and Northern Minnesota Railway, 1 foot east of west right-of-way fence, and 26 meters south of south end of section house. (See note 29, p. 583.)

T. B. M. 37.—A wire nail in new stump of 3-inch jack pine 17 meters west of center of track of Brainerd and Northern Minnesota Railway, opposite seventh telegraph pole north of milepost 32, about 1 mile north of *Pine River, Minn.*

T. B. M. 39.—A wire nail in east root of stump $4\frac{1}{2}$ meters east of center of track of Brainerd and Northern Minnesota Railway, 8 meters north of milepost 34, and about 700 meters south of *Mildred, Minn.*

T. B. M. 41.—A wire nail in root of burnt stump at base of fill on west side of track of Brainerd and Northern Minnesota Railway, 83 meters north of milepost 36, about $1\frac{1}{4}$ miles north of *Mildred, Minn.*

T. B. M. 43.—A wire nail in northwest root of 10-inch jack pine 15 meters east of center of track of Brainerd and Northern Minnesota Railway, 6 meters east of milepost 38, about three-fourths mile south of *Backus, Minn.* Tree has \triangle over nail.

P. B. M. Backus.—A tile and pipe at the village of *Backus, Minn.*, on land of the Pine Tree Lumber Company, at brow of hill sloping east, 26 meters east of center of track of Brainerd and Northern Minnesota Railway, 41 meters south of wagon road leading west across railway, 37 meters north of north end of station house, 61 meters north of water tank. A 14-inch and a 10-inch pine tree, blazed with triangle facing pipe, standing on slope of hill, $15\frac{1}{2}$ meters northeast and 22 meters east, respectively, from pipe. (See note 29, p. 583.)

T. B. M. 46.—A wire nail in west root of pine stump 13 meters east of center of track of Brainerd and Northern Minnesota Railway opposite Koop's sawmill at "Spur of 42," and 340 meters north of milepost 41, about 1 mile south of *Island Lake, Minn.*

T. B. M. 48.—A wire nail in west root of pine stump 2 meters east of eighth telegraph pole north of milepost 43, Brainerd and Northern Minnesota Railway, about 1 mile north of *Island Lake, Minn.*

T. B. M. 49.—A wire nail in root of burnt stump 17 meters west of center of track of Brainerd and Northern Minnesota Railway, at edge of timber and opposite milepost 44, about $1\frac{3}{4}$ miles north of *Island Lake, Minn.*

T. B. M. 50.—A wire nail in top of stump 3 meters west of center of track of Brainerd and Northern Minnesota Railway, at north edge of swamp and south end of small cut, 155 meters north of milepost 45, about $2\frac{1}{2}$ miles south of *Hackensack, Minn.*

T. B. M. 52.—A wire nail in top of stump 5 meters west of center of track of Brainerd and Northern Minnesota Railway, at north end of tangent and south end of small cut on curve, $1\frac{1}{4}$ miles south of *Hackensack, Minn.*

P. B. M. Hackensack.—A tile and pipe in village of *Hackensack, Minn.*, about 10 meters east of main track of Brainerd and Northern Minnesota Railway, 10 meters north of and in line with front of section house, and 90 meters south of station. (See note 29, p. 583.)

T. B. M. 53.—The center of square hole cut in top of embedded granite boulder at village of *Hackensack, Minn.*, 5 meters north of telegraph pole, 2 meters west of side-track, 9 meters east of main track of Brainerd and Northern Minnesota Railway, $53\frac{1}{2}$ meters south of center of station.

T. B. M. 54.—A wire nail in top of burnt stump 3 meters east of center of track of Brainerd and Northern Minnesota Railway, 690 meters south of milepost 49, about 1 mile north of *Hackensack, Minn.*

T. B. M. 55.—A wire nail in top of birch stump 7 meters west of center of track of Brainerd and Northern Minnesota Railway, $1\frac{1}{4}$ telegraph poles north of milepost 50, about $2\frac{1}{2}$ miles north of *Hackensack, Minn.*

T. B. M. 56.—A wire nail in east root of 8-inch white pine tree 20 meters west of center of track of Brainerd and Northern Minnesota Railway, $1\frac{1}{2}$ telegraph poles south of milepost 51, about $3\frac{1}{2}$ miles north of *Hackensack, Minn.*

T. B. M. 57.—A wire nail in top of 2-foot white pine stump at north side of wagon road at road crossing, 7 meters east of center of track of Brainerd and Northern Minnesota Railway, at south end of siding at *Lothrop, Minn.*

P. B. M. Portage Lake.—A tile and pipe on hillside opposite northeast corner of Portage Lake, 12 meters east of center of track of Brainerd and Northern Minnesota Railway, and 15 meters east of and opposite water tower known as Hunter's water tower, one-half mile south of south end of siding at *Hunters, Minn.* (See note 29, p. 583.)

T. B. M. 60.—A nail in root of large pine stump on east side of sidetrack at *Hunters, Minn.*, 70 meters north of head block at south end of switch.

T. B. M. 62.—A wire nail in top of 20-inch stump on bank of lake at end of cut and beginning of fill, 3 meters west of center of track of Brainerd and Northern Minnesota Railway, and 237 meters north of milepost 56, about $1\frac{1}{2}$ miles north of *Hunters, Minn.*

T. B. M. 63.—A wire nail in cap of first bent at south end of trestle of Leech Lake Bridge, on west side of track of Brainerd and Northern Minnesota Railway, near *Walker, Minn.*

T. B. M. 64.—A blue keil mark on highest point of granite boulder at south end of first cut north of trestle over arm of Leech Lake, known as Leech Lake Bridge, 3 meters east of center of track of Brainerd and Northern Minnesota Railway and 375 meters south of milepost 58, about 3 miles south of *Walker, Minn.*

T. B. M. 65.—The highest point on granite boulder 3 meters east of center of track of Brainerd and Northern Minnesota Railway, at north end of cut and 282 meters south of milepost 59, about $1\frac{1}{8}$ miles south of *Walker, Minn.*

P. B. M. Walker.—A tile and pipe in town of *Walker, Minn.*, on top bank of south shore of Leech Lake, on land of Capt. Ely Wright on north side of Cleveland boulevard and east side of Third street. Pipe stands two-thirds meter north of north line of and three-fourths meter east of northwest corner of porch of Mr. Wright's cottage. (See note 29, p. 583.)

P. B. M. Cole.—Center of small square cut on northeast corner of bedplate under iron column at southeast corner of the store building known as the Cole Block, standing on the northwest corner of Minnesota avenue and Fifth street, in the town of *Walker, Minn.*

P. B. M. Water Tank.—Top of copper bolt leaded vertically into top of southwest corner of sandstone cap on northwest pier forming the west wing foundations of water tank, in south portion of the town of *Walker, Minn.* Tank stands on knoll on east side of Fifth street. The letters U. S. P. B. M. are cut in the stone around the bolt.

T. B. M. 69.—Point in small square cut on embedded granite boulder, about flush with ground, with letters U. S. cut under square, 5 meters north of center of track of Brainerd and Northern Minnesota Railway, at west end of short cut and east end of long fill where the Brainerd and Northern Minnesota Railway becomes parallel to the Great Northern Railway, about three-fourths mile west of station at *Walker, Minn.*

T. B. M. 71.—A wire nail in east root of 30-inch white-oak stump, 3 meters west of center of track of Great Northern Railway, 244 meters north of crossing of Brainerd and Northern Minnesota Railway and Great Northern Railway, near *Walker, Minn.*

T. B. M. 72.—A wire nail in northeast root of 3½-foot white-pine tree, having a hollow burnt out on the south side. Tree stands about 16 meters west of center of track of Great Northern Railway at the north edge of bottom along the Kabekona Narrows, 780 meters north of center of drawbridge No. 59 over Kabekona Narrows, and 135 meters south of south end of railroad cut, near *Walker, Minn.*

R. R. B. M.—Bench cut on root of 13-inch black-oak tree, about 12 meters east of center of track of Great Northern Railway, about 770 meters north of center of drawbridge No. 59 over Kabekona Narrows, near *Walker, Minn.*

T. B. M. 73.—A 20-penny wire nail in middle of top of 2-foot Norway-pine stump 2½ meters east of center of track of Great Northern Railway and 15 meters north of signboard reading "Drawbridge one mile," about 1 mile south of *Leech Lake, Minn.*

P. B. M. *Leech Lake*.—A tile and pipe at siding at *Leech Lake, Minn.*, on Great Northern Railway, 24 meters west of center of track, 15 meters west of west side of and directly opposite center of water tank. It is 4 meters east of edge of timber, 806 meters south of milepost 124.

T. B. M. 77.—A wire nail on top of 14-inch poplar stump 3½ meters west of center of track of Great Northern Railway, 618 meters north of milepost 125, about 2 miles north of *Leech Lake, Minn.*

T. B. M. 78.—A wire nail in root of burnt stump 8 meters east of center of track of Great Northern Railway, and about 200 meters north of milepost 127, about 3 miles south of *Wilkinson, Minn.*

T. B. M. 79.—Top of knob cut on highest point of boulder projecting about 3 inches out of ground among three higher boulders 5 meters east of center of track of Great Northern Railway and 822 meters north of milepost 128, about 2 miles south of *Wilkinson, Minn.*

T. B. M. 80.—A wire nail in 8-inch spruce stump about 15 meters west of center of track of Great Northern Railway, at north end of a borrow pit and 444 meters south of milepost 130, near *Wilkinson, Minn.*

T. B. M. 81.—A wire nail in 8-inch stump 5 meters west of center of track of Great Northern Railway, and 7 meters north of northern one of two hand-car houses at *Wilkinson, Minn.*

T. B. M. 82.—A wire nail in top of a 2-foot cedar stump at foot of embankment on west side of Great Northern Railway, 415 meters north of milepost 131, and 1 200 meters south of drawbridge No. 61 over Steamboat River, about a mile north of *Wilkinson, Minn.*

T. B. M. 83.—A tack in bench cut on southwest root of an 18-inch basswood tree near Steamboat River, 17 meters east of center of track of Great Northern Railway and 210 meters south of center of drawbridge No. 61 over Steamboat River, about 1½ miles north of *Wilkinson, Minn.*

T. B. M. Steamboat Lake.—A tile and pipe on high ground near old Indian hut, and about 18 meters from two Indian graves, 3 meters east of edge of bank of borrow pit, 19 meters east of center of track of Great Northern Railway, 201 meters south of south end of drawspan of drawbridge No. 61 over Steamboat River at east end of Steamboat Lake, about $1\frac{1}{2}$ miles north of *Wilkinson, Minn.* (See note 29, p. 583.)

T. B. M. 85.—A wire nail in west root of 16-inch elm tree 15 meters east of center of track of Great Northern Railway, at edge of right of way, at north edge of swamp, a little north of milepost 133, about 3 miles north of *Wilkinson, Minn.*

T. B. M. 86.—A 20-penny wire nail in west edge of top of 2-foot pine stump 4 meters from track of Great Northern Railway, 150 meters north of milepost 134, about 4 miles north of *Wilkinson, Minn.*

T. B. M. 87.—A wire nail in sawed bench on large pine stump $2\frac{1}{2}$ meters east of center of track of Great Northern Railway, 415 meters north of milepost 135, about 5 miles south of *Cass Lake, Minn.*

T. B. M. 89.—A wire nail in top of 4-foot white pine stump $5\frac{1}{2}$ meters east of center of track of Great Northern Railway, 612 meters south of milepost 137, about $3\frac{1}{2}$ miles south of *Cass Lake, Minn.*

T. B. M. 90.—A wire nail in top of 12-inch pine stump 6 meters east of center of track of Great Northern Railway, 160 meters south of road crossing, and 374 meters south of milepost 138, about 2 miles south of *Cass Lake, Minn.*

P. B. M. Wye.—A tile and pipe in the wye at the junction of the Park Rapids division of the Great Northern Railway and the main line at *Cass Lake, Minn.*, in south fork of wye on line of the south line tangent produced and 113 meters north of head block of switch at south point of wye. It is 12.6 meters west of center of track of east leg and 23.4 meters east of track of west leg of the wye. (See note 29, p. 583.)

T. B. M. 93.—A wire nail in top of 30-inch pine stump 14 meters south of center of track of Great Northern Railway, 10 meters west of west end of bridge No. 231, 746 meters east of milepost 103, and about 2 miles west of station at *Cass Lake, Minn.*

T. B. M. 94.—A wire nail in top of 10-inch jack-pine stump 9 meters south of center of track of Great Northern Railway, 9 meters west of signpost marked $\frac{W}{X}$ (whistle for road crossing), 48 meters east of milepost 102, near *Farris, Minn.*

T. B. M. 97.—A wire nail in small pine stump on bank of cut 5 meters south of center of track of Great Northern Railway and 298 meters west of milepost 101, near *Farris, Minn.*

P. B. M. Midge Lake.—A tile and pipe in scattering jack pines on slope of south bank of Midge Lake. It is 22 meters north of center of track of Great Northern Railway, 19 meters south of water's edge of Midge Lake, 62 meters east of point where the water's edge of lake is nearest the railway, 170 meters west of milepost 100, near *Farris, Minn.* Two blazed jack pines stand east 3.1 meters and 4.7 meters, respectively; two others stand westerly 3.3 meters and 4.8 meters, respectively; telegraph pole stands 11 meters south. (See note 29, p. 583.)

T. B. M. 101.—A wire nail in top of 13-inch stump $4\frac{1}{2}$ meters north of center of track of Great Northern Railway and 196 meters west of milepost 99, near *Farris, Minn.*

T. B. M. 102.—A wire nail in top of 30-inch Norway-pine stump 11 meters north

of center of track of Great Northern Railway, directly opposite a log farmhouse, on bank of borrow pit, at edge of small patch of plowed ground and 38 meters west of road crossing, 212 meters northwest of milepost 98, about 2 miles east of *Rosby, Minn.*

T. B. M. 103.—A wire nail in the east root of 30-inch Norway-pine stump 8 meters north of center of track of Great Northern Railway, 75 meters west of culvert No. 223, and about three-fourths mile east of *Rosby, Minn.*

T. B. M. 105.—A wire nail in top of 12-inch tamarack stump 6 meters north of center of track of Great Northern Railway and 10 meters west of milepost 95, near *South Bemidji, Minn.*

T. B. M. 107.—A wire nail in west root of 10-inch jack-pine stump 5 meters south of center of track of Great Northern Railway, 4 meters west of road crossing, and 97 meters west of milepost 93, near *South Bemidji, Minn.*

T. B. M. 108.—A wire nail in top of 12-inch pine stump 1 foot north of north right-of-way fence of Great Northern Railway, 48 meters east of road crossing, and a little west of milepost 92, near *South Bemidji, Minn.*

P. B. M. Δ Bemidji.—A tile and pipe planted on the north line of Great Northern Railway, one-third mile east of the point where the Mississippi River empties into Lake Bemidji, and one-half mile east of the town of *Bemidji, Minn.* It is on the north side of a deep cut and 75 meters east of the west end of the cut and at the west end of a small garden. The knoll through which the railway passes and on which the point stands is covered on the slope with brush and timber. It is about 50 meters south of the Brainerd and Northern Minnesota Railway and about 200 meters south of south end of Lake Bemidji. It is in S. E. $\frac{1}{4}$ of N. E. $\frac{1}{4}$ sec. 16, T. 146 N., R. 33 W. (See note 29, p. 583.)

T. B. M. 111.—A wire nail in north root of 15-inch pine stump 10 meters north of north side and 8 meters east of east end of station house of Great Northern Railway at *Bemidji, Minn.*

P. B. M. Willets.—A tile and pipe in southeast corner of yard of E. J. Willets, on the west side of Irving avenue and north side of Great Northern Railway right of way, in the town of *Bemidji, Minn.* It is 1 foot north of right-of-way fence, 37 meters north of center of wagon bridge over railway cut, and 83 meters south of the center of Second street. (See note 29, p. 583.)

P. B. M. Bemidji Tank.—Top of copper bolt leaded vertically into the west one of the two south stone abutments of city water tank on west side of Irving avenue, between Second and Third streets, in the town of *Bemidji, Minn.* Bolt is in the south east corner of the stone abutment, about 3 inches from either edge, and has the letters U. and S. cut on either side of it.

T. B. M. 114.—A wire nail in top of 10-inch pine stump at farm road crossing 11 meters south of spur track and 73 meters west of head block of switch where logging spur leads off of main line of Great Northern Railway, about 2 600 meters west of station at *Bemidji, Minn.*

P. B. M. Dorman.—A tile and pipe on top of the left bank of Mississippi River, 13 meters east of center of road leading south over Dorman's bridge over the Mississippi River, about 150 meters south of northwest corner of sec. 24, T. 146 N., R. 34 W., near *Bemidji, Minn.* Blazed trees stand as follows: One north 9 meters, one east 5

meters, two south $8\frac{1}{2}$ meters, and one marked T. B. M. 119 southwest 10 meters. (See note 29, p. 583.)

P. B. M. Collette.—A tile and pipe on right bank of Mississippi River 11 meters from water's edge, near *Bemidji, Minn.*, 12 meters west of logging road that leads north from Collette's logging camp, which stands on shore of Twin or Loon Lake, 1 mile south of this point. It is 320 meters west of a point opposite a new log house standing on north or left bank of the river; 8-inch oak, marked T. B. M. 125, stands 1.8 meters east, double birch stands 3 meters north, and a 10-inch elm stands 6 meters north. (See note 29, p. 583.)

P. B. M. Δ County Line.—A tile and pipe on ridge covered with low brush and scattering pine snags, 10 miles southwest of Bemidji, Minn., $1\frac{1}{2}$ miles southeast of Mississippi River, 500 meters northwest of Albert Nelson's house, $2\frac{1}{2}$ miles northwest of *Maltby, Minn.*, 8 meters south of north line of Hubbard County, Minn. Section corner 31-32-5-6 stands east 46 meters; 22-inch Norway pine tree stands east-northeast 61 meters. (See note 29, p. 583.)

P. B. M. Hennepin.—A tile and pipe on high right bank of Mississippi River, near *mouth of Hennepin River, Minn.*, 5 meters from top edge of bank, in clump of jack pines (four of them blazed), 65 meters north of where river first touches base of high bank, one-half mile below mouth of Hennepin River. River runs north along this bank. (See note 29, p. 583.)

P. B. M. Rapids.—A tile and pipe on top of a knoll on first bank on right bank of Mississippi River, near what is known as "*The Rapids, Minn.*" about 30 meters south of the ford at the rapids where the Moose road crosses the river and 60 meters north of a dam in the river, and said to be 3 miles north of the mouth of La Salle River. River runs north here. (See note 29, p. 583.)

P. B. M. La Salle.—A tile and pipe on top and near west point of ridge on right bank of Mississippi River, immediately east of the *mouth of La Salle River, Minn.* A settler's log cabin stands in ravine 40 meters southeast; a blazed 8-inch jack pine stands 12 meters northeast. (See note 29, p. 583.)

P. B. M. Δ Prospect Hill.—A tile and pipe on top of high hill, known as *Prospect Hill, Minn.*, about 20 meters east of bank where it slopes down abruptly to the west into the valley of the Mississippi. It is about 120 meters west of north-and-south road over the hill, and known as the Itasca road. It is about one-fourth mile northwest of junction of Itasca road with road from Smith's camp. (See note 29, p. 583.)

P. B. M. Sherratt.—A tile and pipe on slope of narrow ridge, near *Lake Itasca, Minn.*, 5 meters northeast of road leading to Mississippi River from Otto Sherratt's house. It is 400 meters northwest of junction of roads, which junction is 175 meters northwest of Sherratt's house. Pipe is 180 meters east of Mississippi River at its nearest point and 280 meters east-southeast from bridge over the river. It is in S. E. $\frac{1}{4}$ of N. W. $\frac{1}{4}$ sec. 22, T. 124 N., R. 36 W. Four blazed jack pines stand 15 meters northwest, 20 meters north, 13 meters northeast, and 65 meters east-northeast, respectively, from pipe. (See note 29, p. 583.)

P. B. M. Park Line.—A tile and pipe on top of east bank of *Lake Itasca, Minn.*, one-half meter west of fence corner and in line with fence marking the north boundary of the Itasca State Park. It is about 120° , 105 meters, from house occupied by Mr. Rust. A large white-pine tree standing at water's edge, 10 meters southwest of pipe, is blazed facing pipe. (See note 29, p. 583.)

P. B. M. Δ Itasca.—A tile and pipe on low knoll in dense growth of poplar and aspen, about 600 meters northeast of the Itasca State Park commissioner's house, about 50 meters east of the center of the west line of sec. 1, T. 143 N., R. 36 W., near *Lake Itasca, Minn.* This knoll is on edge of ridge which slopes rapidly to the southeast toward Floating Bog Creek, and is about 50 meters west of deep ravine. A lone Norway pine stands on south slope of knoll 26 meters from pipe. (See note 29, p. 583.)

P. B. M. Park House.—A tile and pipe in Itasca State Park, Minn., 64.5 meters south of the park commissioner's house, 51 meters east of east bank of *Lake Itasca, Minn.*, 16 meters west of angle in road, and on north side of road leading to barn. (See note 29, p. 583.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN CASS LAKE AND GRAND RAPIDS,
MINN.

[See Report, Chief of Engineers, 1901, Supplement, pp. 120-125.]

P. B. M. Roundhouse.—Top of copper bolt leaded vertically into north end of doorsill of double door to boiler room at extreme west end of Great Northern Railway roundhouse at *Cass Lake, Minn.* Bolt is $3\frac{3}{4}$ inches from west edge of sill and $4\frac{3}{4}$ inches from north end of sill.

U. S. E. B. M. 347.—Established by St. Paul United States Engineer Office, 1900, and is stone and pipe on top of high bank at east end of ridge on north side of Pike Bay, in southeast part of the town of *Cass Lake, Minn.*, about 500 meters south of the Eastern Railway of Minnesota, a part of the Great Northern Railway system, and 200 meters west of lumber of Scanlan & Gibson Lumber Company.

U. S. E. B. M. 342.—Established by St. Paul United States Engineer Office, 1900, and is stone and pipe on slope of north bank of Pike Bay, 9 meters south of center of track of Eastern Railway of Minnesota, 440 meters west of milepost 162. It is on south slope of high piece of hill left between railway cut and Pike Bay, $1\frac{2}{3}$ miles from *Cass Lake, Minn.*

T. B. M. 169.—A wire nail in 16-inch jack pine stump 5 meters north of track of Eastern Railway of Minnesota, 133 meters west of milepost 161, near *Lomond, Minn.*

P. B. M. Lomond Spur.—A tile and pipe on high bank at southeast corner of Cass Lake, 15 meters east of logging spur which leaves main line of Eastern Railway of Minnesota at *Lomond, Minn.* It is just below loading works at end of spur track. Trees in vicinity blazed facing pipe. (See note 29, p. 583.)

U. S. E. B. M. 337.—Established by St. Paul United States Engineer Office, 1900, and is a stone and pipe on low bank of Cass Lake about 100 meters east of loading works at end of spur at *Lomond, Minn.*, 10 meters back of water's edge.

T. B. M. 170.—A wire nail in south root of 36-inch burnt stump 5 meters north of center of track of Eastern Railway of Minnesota and 100 meters east of west end of siding at *Cuba, Minn.*

T. B. M. 172.—A wire nail in top of 3-foot white pine stump at foot of embankment on south side of track of Eastern Railway of Minnesota, 158 meters west of milepost 158, and 2 miles from *Cuba, Minn.*

T. B. M. 174.—A wire nail in top of 2-foot pine stump 5 meters north of center of track of Eastern Railway of Minnesota, at west end of borrow pit, about 380 meters east of milepost 156, and $4\frac{1}{3}$ miles from *Schley, Minn.*

T. B. M. 175.—A wire nail in root of 16-inch pine stump 6 meters south of center of track of Eastern Railway of Minnesota, at foot of embankment, about 500 meters east of milepost 155, and about $1\frac{1}{3}$ miles from *Schley, Minn.*

T. B. M. 176.—A wire nail in north part of top of 30-inch Norway pine stump 5 meters south of center of track of Eastern Railway of Minnesota, 55 meters west of signboard reading "Station 1 mile" (meaning 1 mile east to *Schley, Minn.*). It is 436 meters west of milepost 154.

T. B. M. 177.—A wire nail in southwest root of poplar stump 5 meters north of center of track of Eastern Railway of Minnesota, 736 meters east of milepost 154, and one-third mile from *Schley, Minn.*

T. B. M. 179.—A wire nail in small stump 3 meters north of center of track of Eastern Railway of Minnesota at east end of a fill, and 632 meters west of milepost 151, and about 2 miles from *Schley, Minn.*

T. B. M. 181.—A wire nail in root of 26-inch pine stump 5 meters south of center of track of Eastern Railway of Minnesota, 556 meters west of milepost 149, and $3\frac{1}{2}$ miles from *Bena, Minn.*

T. B. M. 183.—A wire nail in top of 8-inch birch stump 3 meters north of center of track of Eastern Railway of Minnesota, 59 meters west of milepost 147, and about $1\frac{1}{2}$ miles from *Bena, Minn.*

P. B. M. \triangle Bigosh.—A tile and pipe 10 meters south of center of track of Eastern Railway of Minnesota, 168 meters east of milepost 147, and 1 mile from *Bena, Minn.* Two large Norway pines south of pipe are blazed facing pipe. (See note 29, p. 583.)

P. B. M. \triangle Bena.—A tile and pipe 10 meters south of center of track of Eastern Railway of Minnesota, 287 meters west of milepost 146, and about 620 meters west of the railway station at *Bena, Minn.* (See note 29, p. 583.)

R. R. B. M. = B. M. 117 H.—A small nail in bench cut on north side of 28-inch Norway pine stump in the village of *Bena, Minn.*, opposite pump house for water tank and about 75 meters west of station, 21 meters south of main track of Eastern Railway of Minnesota, and 8 meters south of south siding. Used by St. Paul United States Engineer Office in 1900.

P. B. M. \triangle Norway Grove.—A tile and pipe 10 meters south of center of track of Eastern Railway of Minnesota, on bank of second cut east of *Bena, Minn.*, 205 meters east of milepost 144. (See note 29, p. 583.)

T. B. M. 188.—A wire nail in root of 22-inch pine stump 12 meters north of center of track of Eastern Railway of Minnesota, on bank of small cut, 540 meters east of milepost 143, and about 3 miles from *Bena, Minn.*

R. R. B. M.—A bench on south side of a large Norway pine, about 3 meters north of T. B. M. 188 and 3 miles from *Bena, Minn.*

T. B. M. 189.—A wire nail in south root of an 18-inch Norway pine, 15 meters north of center of track of Eastern Railway of Minnesota, 574 meters west of milepost 141, and at east end of a fill, near *Nushka, Minn.*

T. B. M. 191.—A wire nail in top of 12-inch cedar stump 2 meters north of center of track of Eastern Railway of Minnesota, 1 meter east of east head block of switch to siding at *Nushka, Minn.*

T. B. M. 192.—A wire nail in southeast root of 24-inch charred pine stump standing on top edge of cut, 12 meters north of center of track of Eastern Railway of Minnesota and 34 meters east of milepost 138, near *Nushka, Minn.*

P. B. M. \triangle Divide.—A tile and pipe 10 meters south of center of track of Eastern Railway of Minnesota, 135 meters east of milepost 137, near *Nushka, Minn.* (See note 29, p. 583.)

B. M. Mississippi.—A tile and pipe on top of ridge 10.5 meters south of center of track of Eastern Railway of Minnesota, 523 meters east of milepost 135, and 620 meters west of west end of trestle over Mississippi River, near *Nushka, Minn.* (See note 29, p. 583.)

U. S. E. B. M. 304.—Established by St. Paul United States Engineer Office, 1900, and is a stone and pipe on high left bank of Mississippi River, about 400 meters east of drawbridge over Mississippi River and $58\frac{1}{2}$ meters north of center of track of Eastern Railway of Minnesota, near *Ball Club, Minn.*

B. M. Tomahawk.—A tile and pipe $10\frac{1}{2}$ meters south of center of track of Eastern Railway of Minnesota, 34 meters west of milepost 133, about one-half mile west of section house at *Ball Club, Minn.* (See note 29, p. 583.)

B. M. Wigwam.—A tile and pipe at first curve east of *Ball Club, Minn.*, about one-fourth mile east of east end of *Ball Club* siding. It is in the northeast corner of a small cultivated patch of ground, about 40 meters south of center of track of Eastern Railway of Minnesota, and about 64 meters east of milepost 132. (See note 29, p. 583.)

T. B. M. 15 C.—Established by St. Paul United States Engineer Office, 1899, and is nail in stump on north side of track of Eastern Railway of Minnesota, about 365 meters east of milepost 132, near *Ball Club, Minn.*

P. B. M. \triangle Starke.—A tile and pipe on north bank of ditch on north side of track of Eastern Railway of Minnesota, 46 meters west of head block of switch at *Starke spur, Minn.* (See note 29, p. 583.)

T. B. M. 200 = T. P. 368 C.—A nail in top of large Norway pine stump standing on north edge of borrow pit, 5 meters south of center of track of Eastern Railway of Minnesota, and 19 meters east of head block of switch at *Starke spur, Minn.* Used by St. Paul United States Engineer Office in 1899.

T. B. M. 202 = T. P. 354 C.—A nail in stump $3\frac{1}{2}$ meters north of center of track of Eastern Railway of Minnesota, 167 meters west of milepost 129, near *Starke, Minn.* Used by St. Paul United States Engineer Office in 1899.

T. B. M. 203.—A wire nail in 24-inch Norway pine stump, 7 meters south of center of track of Eastern Railway of Minnesota, and 3 meters east of milepost 128, near *Deer River, Minn.*

P. B. M. \triangle Old Road.—A tile and pipe on old railroad grade on north side of Eastern Railway of Minnesota, 1 mile west of *Deer River, Minn.*, at first curve west of milepost 126, in line with the north rail of tangent east of curve, and 244 meters west of beginning of curve. (See note 29, p. 583.)

T. B. M. 206.—A small square cut on top southwest corner of south one of the two west stone piers of water tank of Eastern Railway of Minnesota at *Deer River, Minn.* Used by St. Paul United States Engineer Office in 1899.

P. B. M. \triangle Deer River.—A tile and pipe on south right of way of Eastern Railway of Minnesota, about 100 meters east of crossing of Eastern Railway of Minnesota and Itasca County Railway, at *Deer River, Minn.* (See note 29, p. 583.)

B. M. Roundhouse.—A tile and pipe 1 meter west of right-of-way fence, and $8\frac{1}{2}$ meters west of center of track of Itasca County Railway. It is 17 meters south of south

end of a frame building used as a roundhouse, and about one-half mile south of crossing of Itasca County Railway and Eastern Railway of Minnesota at *Deer River, Minn.* (See note 29, p. 583.)

U. S. E. B. M. 192.—Established by St. Paul United States Engineer Office, and is a stone and pipe 60 meters south of center of track of Eastern Railway of Minnesota, on point of high ground, about one-half mile east of station at *Deer River, Minn.*, and about one-fourth mile west of railway bridge over Deer River.

U. S. Engineer Gauge.—A staff gauge nailed to a pile on south side of Eastern Railway of Minnesota bridge over Deer River, about three-fourths mile east of station at *Deer River, Minn.*

T. B. M. 208.—A wire nail in top of 10-inch tamarack stump at south right of way of Eastern Railway of Minnesota, opposite west end of spur and about 200 meters west of milepost 124, near *Deer River, Minn.*

T. B. M. 210.—A wire nail in top of 12-inch cedar stump at south side of track of Eastern Railway of Minnesota, about 320 meters west of milepost 122, near *Hull, Minn.*

T. B. M. 212.—The highest point on boulder 3 meters south of center of track of Eastern Railway of Minnesota, 23 meters east of corner of fence at northwest corner of inclosure around abandoned house and near top of grade. It is 456 meters west of milepost 120, near *Hull, Minn.*

T. B. M. 213.—A wire nail in top of 6-inch poplar stump 6 meters south of center of track of Eastern Railway of Minnesota, and about 175 meters east of east head block of switch at *Hull, Minn.*, siding.

T. B. M. 215.—A wire nail in south root of a 14-inch pine tree, the middle one of three white-pine trees in front of Cook & McHenry's saloon at *Cohasset, Minn.*, 16 meters north of center of track of Eastern Railway of Minnesota, and 10 meters east of Cohasset signboard.

U. S. E. B. M. 166.—Established by St. Paul United States Engineer Office, and is a stone and pipe 3 meters west of garden fence, 12 meters north of center of track of Eastern Railway of Minnesota, 7 meters east and about 23 meters south of the southeast corner of Cook's hotel, in central part of town of *Cohasset, Minn.*, and about 80 meters east of railway station platform.

B. M. Dam.—A tile and pipe on north side of track of Eastern Railway of Minnesota, nearly opposite Pokegama Dam. It is 12.2 meters west of the intersection of the tangents of the north rails of the railway, and practically on line with the tangent through north rail east of curve. It is 46 meters east of road crossing, near *Cohasset, Minn.* (See note 29, p. 583.)

Old U. S. B. M.—Point of arrow on highest point of granite boulder at top of left bank of Mississippi River, about 20 meters below the office of the keeper of the Pokegama Dam, and about 25 meters below Pokegama Falls, near *Pokegama Lake, Minn.* Stone has letters U. S. B. M. cut on it near arrow, and the B. M. was established by United States Engineer Office at St. Paul, Minn., in 1874.

P. B. M. Pokegama Falls.—Top of copper bolt leaded vertically into highest point on largest granite boulder, among other boulders, in midst of the old buildings at Pokegama Falls, used as quarters in building the Pokegama Dam. It is 45 meters back of top of left bank of Mississippi River at Pokegama Falls, and 14 meters north-

northeast of office building of the keeper of the Pokegama Dam, near *Pokegama Lake, Minn.* The letters U. S. P. B. M. are cut in granite around the bolt.

U. S. E. B. M. 167.—Established by St. Paul United States Engineer Office, and is stone and pipe on right bank of Mississippi River, about 25 meters upstream from west approach to Pokegama Dam. It is 1 meter south of an east-and-west fence along north side of a grass field, and is about 20 meters from bank of river, near *Pokegama Lake, Minn.*

P. B. M. Δ Grand Rapids.—A tile and pipe 102 meters south of center of track of Eastern Railway of Minnesota, at first curve west of *Grand Rapids, Minn.*, at the intersection of the south rail of the tangent east with the north rail of the tangent west of this curve. (See note 29, p. 583.)

T. B. M. 220.—A wire nail in south root of 14-inch white-pine tree 24 meters north of Eastern Railway of Minnesota, 142 meters east of milepost 112, 545 meters west of depot of *Grand Rapids, Minn.*

P. B. M. Balustrade.—Top of copper bolt leaded vertically into the top of the south balustrade of the stone steps at the eastern entrance to the Itasca County court-house at *Grand Rapids, Minn.* Bolt is 14 inches from the face of the wall and in center of balustrade. The letters U. S. P. B. M. are cut around the bolt.

P. B. M. Δ Race Track.—A tile and pipe one-fourth mile south of right bank of Mississippi River, nearly opposite B. M. Grand Rapids. It is on the north line of a cemetery and on south side of race track at fair grounds, *Grand Rapids, Minn.*, and about 150 meters east of the exhibit building.

B. M. Grand Rapids.—A tile and pipe in southeast corner of garden, at north right of way of Eastern Railway of Minnesota, about 580 meters east of depot at *Grand Rapids, Minn.*, and 350 meters west of milepost 111. (See note 29, p. 583.)

P. B. M. Prairie River.—Top of copper bolt leaded vertically into southeast corner of capstone in north end of west abutment of Eastern Railway of Minnesota bridge over the Prairie River, near *Grand Rapids, Minn.* Bolt is 2.5 meters north of gauge line of north rail of track and 0.2 meter from the north and east edges of the stone.

P. B. M. Δ La Prairie.—A tile and pipe $10\frac{1}{2}$ meters north of center of track of Eastern Railway of Minnesota, at first curve east of Prairie River, about halfway between mileposts 109 and 108, near *La Prairie, Minn.* (See note 29, p. 583.)

T. B. M. 226.—A wire nail in large knot on northwest side of a large pine stump 7 meters south of center of track of Eastern Railway of Minnesota and 175 meters east of milepost 107, near *La Prairie, Minn.*

T. B. M. 229.—A 20-penny wire nail in bench cut on west root of large burnt white pine stump 2.5 meters east of B. M. Blackberry, 74 meters east of milepost 105, $10\frac{1}{2}$ meters north of center of track of Eastern Railway of Minnesota, at *Blackberry, Minn.*

B. M. Blackberry.—A tile and pipe $10\frac{1}{2}$ meters north of center of track of Eastern Railway of Minnesota, 71 meters east of milepost 105, about 70 meters west of road crossing, and about 80 meters west of *Blackberry, Minn.*, schoolhouse. A blazed white pine tree stands 1 meter north of north right of way fence about 11 meters east of the pipe. (See note 29, p. 583.)

T. B. M. 230.—A 20-penny wire nail in bench cut on northeast root of a 24-inch white pine tree standing about 3 meters south of south right of way fence of Eastern

Railway of Minnesota, 18 meters west of a road crossing railway, 2 meters east of southeast corner of a fence inclosing a grave, about 123 meters east of milepost 105. Tree has a triangle on it over the nail, facing *Blackberry, Minn.*, schoolhouse. (See note 29, p. 583.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN WEST PENN JUNCTION
AND BLAIRSVILLE INTERSECTION, PA.

[Pennsylvania Railroad Bench Mark Book, edition of May, 1899, pp. 78-80.]

P. R. R. 26.—Is at *West Penn Junction, Pa.* (See p. 865, App. 8, Report for 1899.)

P. R. R. 27.—Is 0.8 mile east of *West Penn Junction, Pa.*; water station, foundation of tub; square.

P. R. R. 28.—Is 0.9 mile west of *Bagdad, Pa.*; box culvert, south end; copper bolt.

P. R. R. 29.—Is 0.87 mile east of *Bagdad, Pa.*; rock, south side; shelf.

P. R. R. 30.—Is 0.9 mile west of *Leechburg, Pa.*; east abutment, south end bridge seat; copper bolt.

P. R. R. 31.—Is at *Leechburg, Pa.*; window sill of station; square.

P. R. R. 32.—Is 0.5 mile east of *Leechburg, Pa.*; west abutment, north end bridge seat; copper bolt.

P. R. R. 33.—Is 1.2 miles east of *Hyde Park, Pa.*; box culvert, south end; copper bolt.

P. R. R. 34.—Is 1.5 miles west of *Vandegrift, Pa.*; southeast wing wall of bridge, east end; copper bolt.

P. R. R. 35.—Is at *Vandegrift, Pa.*; doorsill of baggage room; square.

P. R. R. 36.—Is 1.2 miles east of *Vandegrift, Pa.*; box culvert, south end; copper bolt.

P. R. R. 37.—Is 0.8 mile west of *Paulton, Pa.*; northeast, west pier of bridge; copper bolt.

P. R. R. 38.—Is 0.2 mile west of *Paulton, Pa.*; county bridge, southeast wing wall; copper bolt.

P. R. R. 39.—Is 0.7 mile east of *Paulton, Pa.*; rock, south side track; copper bolt.

P. R. R. 40.—Is 0.51 mile east of *Roaring Run, Pa.*; rock, south side track; copper bolt.

P. R. R. 41.—Is 0.49 mile east of *Roaring Run, Pa.*; rock, south side track; copper bolt.

P. R. R. 42.—Is 1.1 miles west of *Salina, Pa.*; rock, south side track; square.

P. R. R. 43.—Is 0.2 mile east of *Salina, Pa.*; east abutment, south end bridge seat; copper bolt.

P. R. R. 44.—Is 0.8 mile east of *Salina, Pa.*; west end tunnel, north side, second course; shelf.

P. R. R. 45.—Is 1.1 miles east of *Salina, Pa.*; east end tunnel, north side, second course; shelf.

P. R. R. 46.—Is 1.3 miles west of *Edri, Pa.*; rock on north side; copper bolt.

P. R. R. 47.—Is 0.1 mile west of *Edri, Pa.*; west abutment, south end bridge seat; copper bolt.

P. R. R. 48.—Is 0.98 mile east of *Edri, Pa.*; rock 70 feet north center line; square.

P. R. R. 49.—Is one mile west of *Saltsburg, Pa.*; west abutment, south end bridge seat; square.

P. R. R. 50.—Is at *Saltsburg, Pa.*; passenger station, doorsill baggage room; square.

P. R. R. 51.—Is 0.5 mile east of *White Rock, Pa.*; north line of railway; copper bolt.

P. R. R. 52.—Is 1.1 miles west of *Tunnelton, Pa.*; northwest wing wall; copper bolt.

P. R. R. 53.—Is 0.4 mile west of *Bow, Pa.*; east end, northwest wing wall; copper bolt.

P. R. R. 54.—Is 0.3 mile west of *Bow, Pa.*; east end, north side Coad's Tunnel; shelf.

P. R. R. 55.—Is 0.7 mile west of *Livermore, Pa.*; southwest wing wall; copper bolt.

P. R. R. 56.—Is 0.2 mile east of *Livermore, Pa.*; southeast wing wall. bridge; copper bolt.

P. R. R. 57.—Is 0.8 mile west of *Social Hall, Pa.*; iron pipe drain, south wall; copper bolt.

P. R. R. 58.—Is at *Social Hall, Pa.*; bridge, southwest wing wall; copper bolt.

P. R. R. 59.—Is 0.4 mile west of *Blairsville, Pa.*; Walnut Street Bridge, northeast wing wall, third course; copper bolt.

P. R. R. 60.—Is at *Blairsville, Pa.*; passenger station, northeast corner, foundation offset; square.

P. R. R. 61.—Is 1.6 miles east of *Blairsville, Pa.*; iron pipe drain, north wall; copper bolt.

P. R. R. 62.—Is 2.8 miles east of *Blairsville, Pa.*; Toms Run Arch, coping south end; copper bolt.

P. R. R. 63.—Is 2.23 miles from *Bolivar Junction, Pa.*; rock 30 feet south of center line; copper bolt.

P. R. R. 43.—Is at *Bolivar Junction, Pa.* (See Report for 1899, App. 8, p. 873.)

P. R. R. 47.—Is at *Blairsville Intersection, Pa.* (See Report for 1899, App. 8, p. 873.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN HARRISBURG AND WILLIAMS-PORT, PA.

[See P. R. R. B. M. Book, edition of May, 1899, pp. 110-113, 96-99.]

P. R. R. 5.—Is near *Rockville, Pa.* (See p. 868, App. 8, Report for 1899.)

P. R. R. 1.—Is near *Hecks, Pa.*; east end, north abutment, S. and S. railroad bridge; copper bolt.

P. R. R. 1a.—Is at *Hecks, Pa.*; foundation Heck's Tower, southeast corner; copper bolt.

P. R. R. 2.—Is near *Dauphin, Pa.*; bridge No. 148, east end, south abutment; copper bolt.

P. R. R. 3.—Is 1.4 miles north of *Dauphin, Pa.*; east side of track, 2 055 feet north of milepost 94-44, red shale rock; copper bolt.

P. R. R. 4.—Is near *Dauphin, Pa.*; bridge No. 150, southeast wing wall; copper bolt.

P. R. R. 5.—Is near *Geiger Point, Pa.*; east side of track, 20 feet south of milepost 96-42, sandstone rock; copper bolt.

P. R. R. 6.—Is near *Clarks Ferry, Pa.*; bridge No. 151, southeast back wall; copper bolt.

P. R. R. 7.—Is 0.9 mile south of *Clarks Ferry, Pa.*; coping of culvert, west side of track, 760 feet north of milepost 98-40; copper bolt.

P. R. R. 8.—Is near *Clarks Ferry, Pa.*; east side of track, 15 feet south of milepost 99-39, shaly sandstone; copper bolt.

P. R. R. 9.—Is near *Clarks Ferry, Pa.*; retaining wall, opposite Clarks Ferry; shelf.

P. R. R. 10.—Is north of *Clarks Ferry, Pa.*; northwest corner, foundation of water tank; copper bolt.

P. R. R. 11.—Is near *Clarks Ferry, Pa.*; bridge No. 152, northwest back wall; shelf.

P. R. R. 12.—Is near *Clarks Ferry, Pa.*; bridge No. 153, east end, north abutment; shelf.

P. R. R. 12a.—Is near *Inglennook, Pa.*; east side of track, 3,570 feet north of milepost 102-36, shaly sandstone rock; copper bolt.

P. R. R. 13.—Is near *Halifax, Pa.*; east side of track, milepost 104-34, shaly rock; shelf.

P. R. R. 14.—Is near *Halifax, Pa.*; east side of track, milepost 105-33, shaly rock; shelf.

P. R. R. 15.—Is near *Halifax, Pa.*; culvert, east side of track, 485 feet north of milepost 106-32; square.

P. R. R. 16.—Is 0.3 mile north of *Halifax, Pa.*; large rock, east side of track, 1 705 feet north of milepost 106-32; square.

P. R. R. 17.—Is near *Halifax, Pa.*; east end of coping, south wing wall of bridge No. 156; copper bolt.

P. R. R. 18.—Is near *Halifax, Pa.*; face of northwest back wall of bridge No. 157; shelf.

P. R. R. 19.—Is 2.9 miles north of *Halifax, Pa.*; foundation of barn, 310 feet south of milepost 109-29; copper bolt.

P. R. R. 20.—Is 1.2 miles south of *Millersburg, Pa.*; south end of retaining wall, east side of track, 1 140 feet south of milepost 111-27; shelf.

P. R. R. 21.—Is near *Millersburg, Pa.*; coping, west end, on north pier of bridge No. 159; copper bolt.

P. R. R. 22.—Is near *Millersburg, Pa.*; bridge No. 160, southwest wing wall; square.

P. R. R. 23.—Is near *Liverpool, Pa.*; face of west abutment of overhead bridge No. 160a; shelf.

P. R. R. 24.—Is at *Liverpool, Pa.*; rock, east of track opposite Liverpool station; copper bolt.

P. R. R. 25.—Is 1.2 miles north of *Liverpool, Pa.*; rock at road crossing, 1 080 feet north of milepost 115-23; copper bolt.

P. R. R. 26.—Is 1.9 miles north of *Liverpool, Pa.*; rock, east side of track, 300 feet south of milepost 116-22; copper bolt.

P. R. R. 26a.—Is 2.6 miles north of *Liverpool, Pa.*; rock, east side of track, 2 970 feet north of milepost 116-22; copper bolt.

P. R. R. 27.—Is 64 feet south of *Mahantago Station, Pa.*; set stone, west side of track; square.

P. R. R. 28.—Is near *Mahantago, Pa.*; bridge No. 162, face of southwest back wall; copper bolt.

P. R. R. 29.—Is 2.6 miles south of *Georgetown, Pa.*; face of retaining wall, west side of track, 2 536 feet north of milepost 119-19; shelf.

P. R. R. 30.—Is 2 miles south of *Georgetown, Pa.*; limestone rock, east side of track, 120 feet south of milepost 120-18; square.

P. R. R. 31.—Is 1.1 miles south of *Georgetown, Pa.*; rock, east side of track, 300 feet south of milepost 121-17; copper bolt.

P. R. R. 32.—Is 0.1 mile south of *Georgetown, Pa.*; east end of south abutment of open culvert, 480 feet south of milepost 122-16; copper bolt.

P. R. R. 32a.—Is near *Georgetown, Pa.*; bridge No. 165, west coping of stone arch; square.

P. R. R. 33.—Is 0.8 mile north of *Georgetown, Pa.*; northeast bridge seat of open culvert, 1 185 feet south of milepost 123-15; copper bolt.

P. R. R. 34.—Is near *Georgetown, Pa.*; bridge No. 166, northwest wing wall; shelf.

P. R. R. 35.—Is 2 miles south of *Herndon, Pa.*; rock cut, 10 feet north of milepost 125-13; shelf.

P. R. R. 36.—Is near *Herndon, Pa.*; bridge No. 169, east coping, stone arch; copper bolt.

P. R. R. 36a.—Is near *Herndon, Pa.*; bridge No. 170, northeast wing wall of stone arch; copper bolt.

P. R. R. 37.—Is at *Herndon, Pa.*; set stone, immediately north of Herndon station; square.

P. R. R. 38.—Is near *Herndon, Pa.*; bridge No. 171, southwest bridge seat; copper bolt.

P. R. R. 39.—Is 2 miles north of *Herndon, Pa.*; red sandstone 78 feet north of milepost 129-9; copper bolt.

P. R. R. 40.—Is near *Herndon, Pa.*; southeast abutment of bridge No. 172; copper bolt.

P. R. R. 41.—Is at *Fishers Ferry, Pa.*; west coping, box culvert; copper bolt.

P. R. R. 42.—Is near *Selinsgrove Junction, Pa.*; rock, east side of track, 90 feet north of milepost 132-6; shelf.

P. R. R. 43.—Is near *Selinsgrove Junction, Pa.*; rock, east side of track, 2 010 feet south of milepost 133-5; copper bolt.

P. R. R. 44.—Is at *Selinsgrove Junction, Pa.*; northeast bridge seat of bridge No. 21, Lewistown Division; copper bolt.

P. R. R. 45.—Is near *Selinsgrove Junction, Pa.*; bridge No. 176, southeast wing wall; copper bolt.

P. R. R. 46.—Is near *Selinsgrove Junction, Pa.*; rock, east side of track, 510 feet north of milepost 135-3; copper bolt.

P. R. R. 47.—Is near *Sunbury, Pa.*; rock, east side of track, 58 feet north of milepost 136-2; shelf.

P. R. R. 48.—Is near *Sunbury, Pa.*; west end of south back wall of bridge No. 179; copper bolt.

P. R. R. 49.—Is at *Sunbury, Pa.*; north end of foundation of water tank, south end of *Sunbury Yard*; square.

P. R. R. 50.—Is at *Sunbury, Pa.*; passenger station, doorsill of women's waiting-room; copper bolt.

P. R. R. 1.—Is near *Sunbury, Pa.*; southwest wing wall of bridge 164¾; square.

P. R. R. 2.—Is near *Sunbury, Pa.*; foundation of roundhouse, north side; square.

P. R. R. 3.—Is near *Northumberland, Pa.*; northeast wing wall of bridge 164; copper bolt.

P. R. R. 4.—Is near *Northumberland, Pa.*; southeast wing wall of bridge 163; square.

P. R. R. 5.—Is near *Northumberland, Pa.*; southwest wing wall of bridge 163; copper bolt.

P. R. R. 6.—Is near *Northumberland, Pa.*; north end of arch culvert, 800 feet west of milepost 285-3; square.

P. R. R. 7.—Is near *Northumberland, Pa.*; south end of east bridge seat of bridge 161; copper bolt.

P. R. R. 8.—Is near *Kapps, Pa.*; back wall of culvert, 906 feet north of milepost 284-4, north side of track; shelf.

P. R. R. 9.—Is near *Kapps, Pa.*; side wall of culvert, 510 feet west of milepost 283-5, north side of track; square.

P. R. R. 10.—Is near *Kapps, Pa.*; capstone of pier of double box culvert, north side of track, 223 feet west of milepost 282-6; copper bolt.

P. R. R. 11.—Is near *Montandon, Pa.*; southwest wing wall of bridge 160; copper bolt.

P. R. R. 12.—Is near *Montandon, Pa.*; set stone at milepost 280-8, north side of track; square.

P. R. R. 13.—Is at *Montandon, Pa.*; southeast wing wall of box culvert, 1 520 feet west of milepost 279-9; copper bolt.

P. R. R. 14.—Is near *Montandon, Pa.*; north face of box culvert, 1 410 feet west of milepost 278-10; shelf.

P. R. R. 15.—Is near *Montandon, Pa.*; northeast wing wall of bridge 159, second course; copper bolt.

P. R. R. 16.—Is near *Dougal, Pa.*; set stone at milepost 276-12, north side of track; square.

P. R. R. 17.—Is at *Milton, Pa.*; middle window sill of passenger station; square.

P. R. R. 18.—Is near *Milton, Pa.*; west end of retaining wall, 2 460 feet east of milepost 274-14; shelf.

P. R. R. 19.—Is near *Milton, Pa.*; north coping of stone arch, bridge 157; copper bolt.

P. R. R. 20.—Is near *Watsonstown, Pa.*; west side of wall culvert, 2 610 feet east of milepost 272-16, north side of track; square.

P. R. R. 21.—Is near *Watsonstown, Pa.*; back wall of culvert, 1 690 feet west of milepost 272-16, north side of track; shelf.

P. R. R. 22.—Is opposite freight station at *Watsonstown, Pa.*; west end of doorsill of J. M. Montgomery's residence; square.

P. R. R. 23.—Is west of *Watsonstown, Pa.*; east end of water tank foundation.

P. R. R. 24.—Is near *Watsonstown, Pa.*; northwest wing wall of bridge 155, second course; copper bolt.

P. R. R. 25.—Is near *Dewart, Pa.*; northwest wing wall of stone arch, bridge 154; copper bolt.

P. R. R. 26.—Is near *Dewart, Pa.*; rock, 2 135 feet east of milepost 267-21, north side of track; copper bolt.

P. R. R. 27.—Is near *Montgomery, Pa.*; culvert, 408 feet west of milepost 266-22, south side of track; copper bolt.

P. R. R. 28.—Is near *Montgomery, Pa.*; northeast wing wall of bridge 153; copper bolt.

P. R. R. 29.—Is near *Montgomery, Pa.*; northwest bridge seat of bridge 153; copper bolt.

P. R. R. 30.—Is at *Montgomery, Pa.*; south end of east doorsill of Montgomery House; square.

P. R. R. 31.—Is near *Montgomery, Pa.*; southwest bridge seat of bridge 151; copper bolt.

P. R. R. 32.—Is near *Montgomery, Pa.*; south coping of stone arch, bridge 149; square.

P. R. R. 33.—Is near *Muncy, Pa.*; north coping of stone arch, bridge 148; copper bolt.

P. R. R. 34.—Is near *Muncy, Pa.*; northeast bridge seat of bridge 147; copper bolt.

P. R. R. 35.—Is near *Muncy, Pa.*; culvert, 410 feet east of milepost 259-29, north side of track; shelf.

P. R. R. 36.—Is near *Muncy, Pa.*; large rock, 955 feet east of milepost 258-30, 30 feet north of track; copper bolt.

P. R. R. 37.—Is near *Muncy, Pa.*; back wall of culvert, 510 feet west of milepost 257-31, south side of track; square.

P. R. R. 38.—Is near *Loyalsock, Pa.*; back wall of culvert, 1 443 feet west of milepost 256-32, south side of track; square.

P. R. R. 39.—Is near *Loyalsock, Pa.*; back wall of culvert, 86 feet east of milepost 255-33, south side of track; shelf.

P. R. R. 40.—Is near *Loyalsock, Pa.*; east end of retaining wall, 480 feet west of milepost 254-34, south side of track; copper bolt in shelf.

P. R. R. 41.—Is near *Loyalsock, Pa.*; culvert, 75 feet east of milepost 253-35, north side of track; copper bolt.

P. R. R. 42.—Is near *Loyalsock, Pa.*; back wall of culvert, 2 140 feet east of milepost 252-36, south side of track; copper bolt.

P. R. R. 43.—Is near *Williamsport, Pa.*; northwest bridge seat of bridge 146; copper bolt.

P. R. R. 44.—Is near *Williamsport, Pa.*; northeast bridge seat of bridge 145; copper bolt.

P. R. R. 45.—Is near *Williamsport, Pa.*; northwest bridge seat of bridge 145; copper bolt.

P. R. R. 45a.—Is at *Williamsport, Pa.*; doorsill of brick dwelling No. 314 Fourth street, 450 feet west of milepost 249-39, south side of track; square.

P. R. R. 46.—Is at *Williamsport, Pa.*; northwest corner base of Soldiers' Monument; square.

P. R. R. 46a.—Is at *Williamsport, Pa.*; north end of doorsill at east end of freight station; square.

P. R. R. 47.—Is at *Williamsport, Pa.*; water table, general superintendent's office building, north side, east of entrance; shelf.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN BILOXI AND FORT ADAMS,
MISSISSIPPI.

[See Report Chief of Engineers, 1900, Part 7, pp. 4726-4740.]

E₁.—Is near *Ocean Springs, Jackson County, Miss.*, near the east end of the Biloxi Bay bridge, and about 68 meters south of the Louisville and Nashville Railroad track, in the yard of the frame house owned and occupied by the Rev. J. B. Walker, and 0.8 meter from the brick pier under the northwest corner, and consists of the bottom of a square cut in the top of a marble stone 6 by 4 inches on top and about 2½ feet long, projecting about 4 inches above the ground, with the letters U. S. C. S. cut upon the top.

P. B. M. Keenor.—Is near *Ocean Springs, Jackson County, Miss.*, on the east side of Biloxi Bay, 75 meters north of the Louisville and Nashville Railroad track, and about 90 meters east of the Biloxi Bay railroad trestle; 1 meter west of the gallery of the summer cottage of Bishop J. C. Keenor, and 3½ meters north of the southwest corner of the gallery in front of the house. (See note 29, p. 583.)

Biloxi, Gauge B.—Is near *Biloxi, Harrison County, Miss.*, on the upper edge of the iron plate of the Biloxi gauge, at angle in the line of piling near gauge house. Marks are cut thus: $\swarrow \searrow$ in the iron, and the letter B is cut in plank near the bench mark.

P. B. M. 19 A.—Is near *Biloxi, Harrison County, Miss.*, 225 meters west of Biloxi Bay bridge, and 30 meters south of the center of the track of the Louisville and Nashville Railroad, on the top of a stone post. P. B. M. 19 or H₁ was established on this stone, but the top was broken off, destroying the mark. The present bench mark is the intersection of cross lines in the corner of stone nearest the bay. Pine trees near the stone are blazed facing it.

T. B. M. 184.—Is at *Biloxi, Harrison County, Miss.*, in the northeast corner of the yard of the public school, on the south side of the Louisville and Nashville Railroad, and on the west side of the street which leads south to the city hall, in the northeast root of a leaning sycamore tree about one-half inch under the surface of the ground. (See note 33, p. 583.)

P. B. M. City Hall.—Is at *Biloxi, Harrison County, Miss.*, and is the top of copper bolt leaded vertically into the top of the southeast corner of the buttress standing on the east side of the entrance to the city hall and court-house, on the north side of Howard avenue and facing Main street leading south to the beach. The top of the buttress is the same height as the water table of the building, and is built of brick and covered with cement. The bolt is 0.1 meter from the east and south edges of the buttress and nearly flush with its surface.

T. B. M. 183.—Is at *Biloxi, Harrison County, Miss.*, about 60 meters southwest of the southwest corner of the passenger depot in one of the many northeast roots of the large, lone, double, live oak tree standing in open plat of ground which belongs to the Louisville and Nashville Railroad Company and is a proposed park. (See note 33, p. 583.)

T. B. M. 186.—Is at *Biloxi, Harrison County, Miss.*, 13 meters south of the warehouse and 115 meters west of the Louisville and Nashville Railroad passenger depot, in the northwest portion of open plat of ground belonging to the railroad and proposed as a park, 25 meters east of the Hygeia ice plant, in the south root of a 4-foot live-oak tree, about 3 feet from the body of the tree. (See note 33, p. 583.)

P. B. M. Hygeia.—Is at *Biloxi, Harrison County, Miss.*, in the southeast corner of the yard of the Hygeia ice plant, owned by Charles McCormack; 30 meters south of the ice-factory building, 74 meters south of the Louisville and Nashville Railroad, 136 meters west of the passenger depot, about 1 meter each from the south and east fences. The cap is about 2 feet above the ground. (See note 29, p. 583.)

P. B. M. 17.—Is at *Beauvoir, Harrison County, Miss.*, and is a copper bolt leaded in the top of a marking stone 11 meters south of the center of the track of the Louisville and Nashville Railroad, $2\frac{1}{2}$ meters west and 1 meter north of the southwest corner of the station building. The corners of the stone are chipped off.

P. B. M. 16.—Is at *Mississippi City, Harrison County, Miss.*, in the west wall of the jail and is the center of copper bolt leaded horizontally in center of fifth brick from northwest corner, in the fifteenth course above the water table. It is marked

U S

⊙

B M

P. B. M. 14.—Is 252 meters east of the station at *White Harbor, Harrison County, Miss.*, and is the top of a copper bolt leaded in the top of a stone marked U. S., 8 meters north of center of track of the Louisville and Nashville Railroad, and 193 meters east of milepost 62 N. O.

P. B. M. 13.—Is at *Pass Christian, Harrison County, Miss.*, and is top of a copper bolt leaded in the top of a stone marked U. S., about 9 meters south of the center of the Louisville and Nashville Railroad track, $5\frac{1}{2}$ meters south of the platform, and $8\frac{1}{2}$ rail lengths east of the passenger depot. The stone projects about 1 inch out of the ground and has one corner broken off.

P. B. M. 11.—Is at *Bay St. Louis, Hancock County, Miss.*, and is the top of a copper bolt leaded in the top of a stone, marked U. S., about one-half meter north of the fence along the south side of right of way of the Louisville and Nashville Railroad and about 1 meter west of the corner of the fence at the west side of Front street; about 12 meters south of the center of the track, and about 30 meters west of the railroad trestle over Bay St. Louis. The stone is about 2 inches above ground and has its corners chipped off.

P. B. M. 10.—Is at *Bay St. Louis, Hancock County, Miss.*, and is the center of a copper bolt leaded horizontally in the face of the southern brick wall of the vestibule of the Catholic Church, about half way between the side entrance of the vestibule and the main front wall and about 1 meter above the ground. The building has been stuccoed over and a hole left in the stucco at the bolt.

P. B. M. 9.—Is at *Waveland, Hancock County, Miss.*, 36 meters south of the southwest corner of the station, on the Louisville and Nashville Railroad, in line with the fence on the west side of the lane along the west side of Merwood dairy farm, 12 meters north from the corner of the fence at the end of the lane, 12 meters west of the shell road leading toward the bay, and consists of the top of a cross in the center of a marking stone marked U. S., projecting 3 inches above the ground.

P. B. M. 8.—Is at *Chinchuba, Hancock County, Miss.*, in the northwest portion of the yard around the section house at the station and about 10 meters south of the center of the Louisville and Nashville Railroad track and is the top of a cross in the center of a stone, marked U. S., projecting about one-half foot above the ground.

P. B. M. 7.—Is at *Claiborne, Hancock County, Miss.*, and is the center of a cross cut in the top of a stone, marked U. S., just north of the north fence of the house lot of Pat. Ferril, 18 meters south of the center of the Louisville and Nashville Railroad track, 12 meters (measured parallel to the track) east of the station house.

P. B. M. 6.—Is near *Claiborne, Hancock County, Miss.*, and is the top of a copper bolt leaded into the top of a stone, standing 10 inches above the ground, on a high point of ground just east of East Pearl River; 200 meters east of the iron truss bridge over the East Pearl River on the Louisville and Nashville Railroad; 27.2 meters south of the center of the track; in the gravel walk along the front of Baldwin Lodge, and 12 meters west of the house. The property is owned by A. Baldwin, of New Orleans. The stone is marked thus:

1882 U. S. B. M.

P. B. M. 4.—Is at *Fort Macomb, Chef Menteur, La.*, and is the center of a copper bolt leaded horizontally in the wall of Fort Macomb, on the right-hand side (as you go in) of the entrance. There is a moat around the wall. The bridge over the moat has rotted away. The sill to the entrance to the fort is removed, but the wall seems to be in first-class condition. The bench mark is marked around the bolt thus:

U. S.
18 ○ 82
P. B. M.

T. B. M. 95.—Is at *New Orleans, Orleans Parish, La.*, in the southeast root of a 30-inch live-oak tree, the first one north of North Claiborne street, on the west side of Elysian Fields street; 14 meters north of the gate leading to the residence of Dr. R. Tudury, midway between the curb line and granitoid walk. (See note 33, p. 583.)

P. B. M. 41.—Is at *New Orleans, Orleans Parish, La.*, and is the top of a vertical copper bolt in the brick pier under the south post of the electric-light tower at the southwest corner of Anthonia and Claiborne streets; 3 inches east of the southeast corner of the iron bedplate, about 2 feet inside of the curb line on the west side of Anthonia street, and 2.7 meters south of the southwest corner of the two streets. The bolt is about 3 inches under ground.

P. B. M. 3.—Is at *New Orleans, Orleans Parish, La.*, established by the Mississippi River Commission in 1882, and is a horizontal line on the end of a horizontal copper bolt in the east face of the middle brick gatepost of the Gentilly gate, on the east side of the fair grounds, in the fifth course of bricks above the ground, and marked thus: U. ⊙ S.

T. B. M. 175. (Paige, 1893).—Is at *New Orleans, Orleans Parish, La.*, and is a + cut on the iron bedplate supporting the southern post of the electric-light tower at the corner of Lapeyrouse street and Gentilly road.

P. B. M. 2.—Is at *New Orleans, Orleans Parish, La.*, established by the Mississippi River Commission in 1882, and is the center of the end of a horizontal copper bolt in the northwest face of the southern wing of the abutment at the northwest end of the drawbridge over Bayou St. John, on the Esplanade road. It is marked thus:

U S
⊙
P B M

The brick wing of the abutment in which the bolt is leaded is very badly cracked (1900) and shows signs of settling.

Halfway House.—Is at *New Orleans, Orleans Parish, La.*, and is a + on the top surface of a granite marking stone on the west side of the canal near the entrance to Metairie Cemetery; in line with the fence along the south side of the cemetery, 4.7 meters from the southern end of the wall forming the cemetery entrance, and 41 meters from the western end of the bridge crossing the canal. The top of the stone is 120 by 200 millimeters, marked thus: ⊕, and is quite rough. It is lower at the intersection of the + than elsewhere, and the rod was held at this point.

City Stone XXMR.—Is at *New Orleans, Orleans Parish, La.*, and is a granite monument 1 foot square, in the southwest corner of the City Park; 3 meters each from the south and west fences. The top of stone is marked thus:

XXMR
JUNE
1874

and the bench mark is the center of the upper part of figure 8.

City Park.—Is at *New Orleans, Orleans Parish, La.*, and is a cross on the highest part of a limestone monument, 5 inches square, in the City Park, 9 meters from the west fence and 95 meters from the south fence. The cross is about 1 inch south of the hole in the center of the stone.

T. B. M. 170.—Is at *New Orleans, Orleans Parish, La.*, and is a point in square cut on the southeast corner of the projection of a brick post at the southeast corner of Calumet National Cemetery, three-fourths of a mile below Jackson Barracks in New Orleans, at the end of the brick wall in front of the cemetery, on the north side of the road, 5 meters from the inner base of the levee.

City Stone XXMB.—Is at *Carrollton, Orleans Parish, La.*, and is the top of a granite marking stone in the line of trees on the west side of the electric car tracks on Carrollton avenue, 44.3 meters from the northwest corner of Elm street and Carrollton avenue,

52.9 meters from the southwest corner of Zimple street and Carrollton avenue, 14.2 meters from the west line of Carrollton avenue, and 2 meters west of the west rail of the street-car track. The top of the stone is 1 foot below ground and is marked thus:

X X M B JUNE + 1874

Rods held on the point indicated on the sketch by a cross; there is no cross on the stone. The bench mark was reported in good condition in 1898.

T. B. M. 160.—Is at *Carrollton, Orleans Parish, La.*, and is a nail in the west root of an 18-inch live-oak tree on the east side of Carrollton avenue, the first tree north of the entrance to the school building, McDonough No. 23.

P. B. M. Carrollton.—Is at *Carrollton, Orleans Parish, La.*, and is the center of a small hole in the center of a copper bolt, leaded horizontally in the northeast face of the masonry at the north corner of the school building, McDonough No. 23 (old courthouse), on Carrollton avenue. The bolt is in the middle of the base of the pilaster at the corner of the building 0.3 feet below the water table of pilaster and about 1.5 feet above ground, marked

U S
⊙
P B M

B. M. A. (Ewens, 1892).—Is at *Carrollton, Jefferson Parish, La.*, and is the Carrollton gauge bench mark. It is a stone and pipe located to the left of the steps of the entrance to a tin shop belonging to F. Marsel, 6 meters back of the levee, about 80 meters above the end of St. Charles avenue at the levee, in a flower bed 1 foot from the front porch. Cap of pipe marked with letters U. S. E. B. M.

P. B. M. V.—Is near *St. Rose, La.*, on *Destrehan Plantation, St. Charles Parish, La.*, and is a point in a square cut on the granite sill under the middle of a small iron gate to footway on the west side of the large iron gate at the main entrance to the yard in front of Judge Rost's house, about 12 meters from the inner base of the levee, marked

U S
□
B M

This bench mark was moved back about 100 feet in the summer of 1894, when a new levee was built.

P. B. M. VI.—Is nearly opposite *Hahnville, St. Charles Parish, La.*, and is a point in a square cut on top of the southwest corner of the pedestal under the column on the eastern side of the steps at the front entrance of Edward Sarpy's house on Prospect plantation. The pedestal is of brick, covered with hard stucco, 14 meters back from the inner base of the levee, marked

U S
18 □ 80
B M

The bench mark was in good condition in 1898.

P. B. M. VII.—Is near *Sellers, St. Charles Parish, La.*, and is the head of an iron bolt in a cement post at the foot of a large pecan tree in front of the house on the estate of Marcellus Roussell, about one-half mile below Gipsy plantation. The bench mark is buried beneath the surface of the ground and covered over with earth. It is 1 foot and 1.5 feet, respectively, from two nails driven in projecting roots of the tree. The tree is blazed with a triangle facing the bench mark. It was reported in good condition in 1898.

△ Chenet.—Is at *Mount Airy, in St. John the Baptist Parish, La.*, 3 miles below Lutchet, La., and is a screw pile 70 meters north of the Yazoo and Mississippi Valley Railroad, 125 meters west of the east head block of Mount Airy siding, about 50 meters east of a bridge marked L. 36-62, about 1200 meters below the parish line between St. John the Baptist and St. James parishes. The bench mark is a cross on top of cap of pile. Cap is badly broken, but the cross is firm (1898).

P. B. M. X.—Is at *Mount Airy, La.*, and is a point surrounded by a groove cut in the upper surface of the granite sill at the foot of the iron stairway in front of the house of Joseph Lebourgeois, on Mount Airy plantation, St. John the Baptist Parish, La. It is marked with the letters U. S. B. M., 1880, and was reported in good condition in 1898.

T. B. M. 83.—Is about 760 meters above the depot at *Lutchet, St. James Parish, La.*, in the root of a 12-inch hackberry tree about 60 meters toward the river from the Yazoo and Mississippi Valley Railroad track, on the edge of a north and south ditch, and 12 meters west of a 24-inch pecan tree. (See note 33, p. 583.)

T. B. M. 71.—Is on *Belmont Plantation, near Hester, St. James Parish, La.*, in the north root of a 30-inch live-oak tree, 20 meters south of the Yazoo and Mississippi Valley Railroad track, 12 meters east and 38 meters north of Belmont store. (See note 33, p. 583.)

P. B. M. XII.—Is on *Belmont Plantation, near Hester, La.*, $2\frac{1}{2}$ miles below Jefferson College, at *College Point, St. James Parish, La.*, about 60 meters outside of the new levee, in front of Belmont store on the ruins of the mansion house which was burned about February, 1894, and the columns only left standing, in the cement pedestal of the column at the southwest corner. It consisted originally of the bottom of a square cavity marked with the letters U. S. B. M. Earth has been taken from around the ruin for the new levee and the cement is broken off the corner of the pedestal, leaving only one corner of the square cavity and part of the letters, but the elevation of the bench mark seems to be undisturbed (1898).

△ Homestead.—Is on *Oneida Plantation, near Hester, La.*, on a screw pile on the west side of a small ditch, 35 meters south of the Yazoo and Mississippi Valley Railroad, 59 meters below milepost 48, 76 meters below a large ditch, and 465 meters above the quarters on the plantation. The + marking the geodetic point on top of the cap used as the bench mark.

P. B. M. XIII.—Is near *Hester, St. James Parish, La.*, near the southeast side of the large gateway in front of Jefferson College, on the iron post which divides the carriage drive and the footpath, 3.8 feet and 17.8 feet, respectively, from the east and west brick buttresses of the gateway. The bench mark is a horizontal line cut on two sides of the southwest corner of the post, 4.9 feet above brick foundation. It was reported in good condition in 1898.

P. B. M. XIV.—Is near *Convent, St. James Parish, La.*, in the south end of granite doorsill at the most southern entrance on the front or west side of the Convent of the Sacred Heart, 7 meters north of the southwest corner of the convent and about 4 feet above the ground. It was reported in good condition in 1898. (See note 3, p. 580.)

P. B. M. XV.—Is at *Colomb, St. James Parish, La.*, and is a point in a square cut on the northwest corner of the stone pedestal of the pillar on the south side of the entrance to the house of George Schepp, formerly owned by Leopold Colomb. The house stands about 10 meters back of the levee, opposite Colomb station, on the Yazoo and Mississippi Valley Railroad, and about 70 meters above Colomb Park store. It is marked

U S B M

X ◇ V

It was reported in a good state of preservation in 1898.

P. B. M. XVI.—Is on *Union Plantation, 2½ miles below Burnside, Ascension Parish, La.*, and is a point in a square cut on a limestone slab at the side of the front steps of the main residence, just back of the levee on the left bank of the river, one-half mile above stone line 190, and 900 meters from the Yazoo and Mississippi Valley Railroad. It is marked with the letters U. S. B. M., and was reported in good condition in 1898.

B. M. 14^a.—Is near *Belle Helene, Ascension Parish, La.*, on Linwood plantation, on the north side of the road leading back from Linwood Landing, about 600 meters toward the river from the Yazoo and Mississippi Valley Railroad, 100 meters southwesterly from a large brick house between the road and the ditch, and consists of a flat stone and iron pipe, with cap of pipe gone. Blazed trees: 12-inch magnolia is 5 meters north; 12-inch magnolia 13 meters west.

P. B. M. New River.—Is at *New River, Ascension Parish, La.*, on the Yazoo and Mississippi Valley Railroad, 14½ meters west of the track, 83 meters below the depot, on the west edge of the right of way, 18 meters above the road crossing, 2 feet from the junction of the right-of-way fence and the fence on the north side of the road leading to the river. (See note 29, p. 583.)

P. B. M. XX.—Is a point on the upper surface of the projecting brick foundation running around the house, on *Southwood plantation, near Geismar, La.*, formerly called *Hard Times*, at the extreme upper end of *Ascension Parish, La.* A square opening was cut through the stucco covering, so as to allow the rods to rest upon the brick. The bench mark is marked with the letters U. S. B. M. and the date 1880, and was reported in good condition in 1897.

P. B. M. St. Gabriel.—Is at *St. Gabriel, Iberville Parish, La.*, on the Yazoo and Mississippi Valley Railroad, on a small ridge between two small ditches, 1 meter north of the fence along the south side of the road, at the east end of the lane leading from the river back to the railroad station, 31 meters west of the southwest corner of the depot, 46 meters west of the main railroad track, 35 meters from the corner of the fence on the west side of the right of way, 10 meters from a 24-inch hackberry tree, and 3 meters south of an 18-inch honey-locust tree. The trees are marked with a triangular blaze. (See note 29, p. 583, except the tile is marked \triangle 1895, and cap is marked U. S. P. B. M. 1891.)

T. B. M. 22.—Is near *Sunshine, La.*, on *Willow Glen plantation, Iberville Parish, La.*, and is the head of a spike driven in the west root of a 24-inch pecan tree, on the east side of the road at the foot of the levee, 6 meters north of the gate on the crossroad from the public road to the railroad, 11 meters north of the northwest corner of the front yard of the main house.

P. B. M. XXIV.—Is near *Sunshine, La.*, at *Forlorn Hope Landing, Iberville Parish, La.*, on the left bank of the river, 10 meters back of the levee, 145 meters in front of Grenada sugar house, 2 meters east of the southwest corner of a yard just outside of the fence along the road, and 65 meters above the tramway running from the sugar house to the levee, in the top of a granite post, which was reported in good condition in 1897. (See note 5, p. 580.)

B. M. 17².—Is near *Sunshine, Iberville Parish, La.*, and is a copper bolt in the top of a limestone post on the left bank, in a back yard, 11 meters north from the northeast corner of kitchen, 17½ meters northwest of a 30-inch sycamore tree. Stone in good condition (1897).

B. M. 17³.—Is near *Burtville, East Baton Rouge Parish, La.*, on the left bank of the river, opposite Manchac Point, 450 meters east of the Yazoo and Mississippi Valley Railroad, about 75 meters south of the tramway running back from the river to a saw-mill, and about 50 meters southeast from a house, and consists of a flat stone and iron pipe. In 1897 it was reported that the stone was in good condition, but the cap was gone from the pipe.

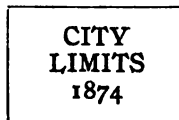
P. B. M. XXIX.—Is near *Baton Rouge, East Baton Rouge Parish, La.*, and is the top of a square cut on the top of a limestone monument 14 inches square, at the south end of the Baton Rouge base line; the stone is 4 feet under the inner or east slope of the levee, 10 feet from the inner base of the levee, 20 meters below the angle in the levee, 10 meters down the river from the plantation line on which stands a 14-inch pecan tree in line of fence along the road, 2 meters down the river from a point opposite an 18-inch hackberry stump 5 feet high, which stands on the opposite side of the road 10 meters from the bench mark, and is blazed with a triangle; a pecan tree blazed with triangle is 14.8 meters from the bench mark. A 4-foot pipe was placed over the copper bolt in the center of the stone in 1897; its cap is marked U. S. P. B. M. 1891, and just shows above the slope of the levee. The bench mark is not of any value as a bench mark on account of the great weight upon it, especially during high water when the levee is thoroughly saturated.

P. B. M. XXVIII.—Is about 4 miles below *Baton Rouge, East Baton Rouge Parish, La.*, and is the bottom of a small square cavity cut in the top of a marble monument, which is 6 inches square at the top, on the left bank of the Mississippi River, on Arlington plantation, about 120 meters west of the levee, 40 meters from the river bank. Blazed trees: 40-inch live oak 10 meters southeast, 40-inch live oak 20 meters northeast. Monument in good condition in 1897.

P. B. M. XXX.—Is about 700 meters south of the city limits of *Baton Rouge, East Baton Rouge Parish, La.*, and is the top of a copper bolt in the top of a limestone monument 14 inches square, marked with U. S. on the north face and 1880 on the south face, at the north end of the Baton Rouge base line, 80 meters west of the Yazoo and Mississippi Valley Railroad, 40 meters east of the levee, in a truck patch, 2 meters north of a small

ditch, 200 meters below a sugar mill which stands outside of the levee. The monument was 6 inches above ground and in good condition in 1897.

P. B. M. City Limits.—Is at *Baton Rouge, East Baton Rouge Parish, La.*, at the base of the levee, 90 meters below the south side of South boulevard, on the top of a 6 by 6 inch marble stone marking the southwest corner of the city limits of Baton Rouge. The top of the stone is sloping and is marked



The bench mark is the highest part inside of the upper part of the figure 8.

U. S. E. 2.—Is at *Baton Rouge, East Baton Rouge Parish, La.*, and is on the top of the cast-iron coping of the brick foundation for the iron fence on the west side of the capitol grounds, on the southwest corner of the pedestal under the seventh iron post south of the northwest corner of the grounds, marked



The rod was held between the apex of the angle and the straight line.

T. B. M. 1.—Is at *Baton Rouge, East Baton Rouge Parish, La.*, on the north end of the lowest granite step of the west entrance to the State capitol building, 4 inches from the front of the step, and 4 inches from the balustrade. (See note 5, p. 580.)

P. B. M. XXXI.—Is at *Baton Rouge, East Baton Rouge Parish, La.*, and is a bench mark of the United States Engineers; it is the top edge of the marble foundation stone under the center of the west side of the tower on the north side of the west entrance to the State capitol building, directly under the round window in the west face of the tower, 27 inches above the ground, 5 inches above the top granite foundation stone, directly over and 29 millimeters above the horizontal furrow of mark (\wedge) cut in the face of the stone. The edge is at the base of the molding cut in the stone.

P. B. M. Barracks.—Is at *Baton Rouge, East Baton Rouge Parish, La.*, and is the top of a copper bolt leaded vertically into the top of the southeast corner of the pedestal under the column at the southeast corner of building "B" in the university campus (old barracks), marked



T. B. M. 2.—Is at *Baton Rouge, East Baton Rouge Parish, La.*, in the north root of a live-oak tree on the south line of a small park in the center of North boulevard, at its intersection with St. Louis street, opposite city hall. (See note 33, p. 583.)

P. B. M. Post-Office.—Is at *Baton Rouge, East Baton Rouge Parish, La.*, on the Government post-office building on the northwest corner of North boulevard and Church street, and is the top of a copper bolt leaded vertically into the corner of the water table

at the southeast corner of the colonnade in front of the building, 1 414 millimeters above the granitoid pavement and 100 millimeters from the southeast corner of the water table, marked

U S
⊙
P B M

The foundation of the post-office was laid in 1894.

P. B. M. North Boulevard.—Is at *Baton Rouge, East Baton Rouge Parish, La.*, on the south side of a small park in the center of North boulevard, on line with center of Church street, 36.6 meters from the northeast corner of Church street and North boulevard, 37.6 meters from the southeast corner of the post-office building, 20 meters east of the band stand in the park, and 30.7 meters from the southwest corner of North boulevard and St. Ferdinand street, and about 190 meters east of the State capitol building. (See note 29, p. 583, except the tile is marked "1893" and the cap of the iron pipe is marked "1897.")

P. B. M. XXXII.—Is at *West Baton Rouge, La.*, in the center of a granite post buried in the flower garden in front of a plantation house, 90 meters back of the levee, 190 meters back from the right bank of the river, about 200 meters above a point directly opposite the State capitol building, and about 400 meters below the ferry landing. The plantation house was owned by J. H. Gay in 1880. The stone is 1 foot above ground, in good condition (1897). (See note 3, p. 580.)

T. B. M. 90.—It is near *West Baton Rouge, La.*, on *Homestead plantation, West Baton Rouge Parish, La.*, in the west root of a 2½-foot live-oak tree in the road back of the levee, in front of the residence of J. H. Hiss, 1 meter from the yard fence, half-way between the front gate and the south line of the yard. (See note 33, p. 583.)

T. B. M. 89.—Is near *West Baton Rouge, La.*, on *Anchorage plantation, West Baton Rouge Parish, La.*, 143 meters below the dividing line of Anchorage and Poplar Grove plantations, in the east root of a 3-foot pecan tree, standing in the road back of levee and 3 meters from the fence, and 1 meter below a large gate. A 5-foot pecan tree stands about 45 meters up the road from the bench-mark tree. (See note 33, p. 583.)

B. M. 179.—Is near *West Baton Rouge, La.*, on *Poplar Grove plantation, West Baton Rouge Parish, La.*, on the river side of the new levee, at its base, and 35 meters below the prolongation of the fence along the south side of the yard around the residence of Mr. Auguste Lesseps, and consists of a copper bolt in a stone post, about 3 inches above ground.

T. B. M. 88.—Is near *West Baton Rouge, La.*, on *Poplar Grove plantation, West Baton Rouge Parish, La.*, in the east root of a 10-inch china-berry tree standing in the front yard of Mr. Auguste Lesseps's residence, 5 meters from the front fence, and on the lower side of the footpath leading from the road to the house. (See note 33, p. 583.)

P. B. M. Poplar Grove.—Is near *West Baton Rouge, La.*, on *Poplar Grove plantation, West Baton Rouge Parish, La.*, on the downstream side of the front steps to gallery of the plantation residence, occupied by Mr. Auguste Lesseps, agent for Mrs. Harris, owner; 0.4 meter below the downstream outer edge of the steps, and 1.14 meters out from the face line of the brick pillars under the gallery. (See note 29, p. 583.)

T. B. M. 87.—Is near *West Baton Rouge, La.*, on *Favrot plantation, West Baton Rouge Parish, La.*, in the east root of a large live-oak tree standing inside of a fence back of the road back of the levee, 103 meters below the lower edge of the residence of Mr. Favrot. The bench mark is outside the fence. (See note 33, p. 583.)

T. B. M. 85.—Is near *Lobdell, La.*, on *Belair Point, West Baton Rouge Parish, La.*, in the root of an 8-inch tree standing one-half meter back of the fence, back of the road, back of the levee, back of the high-water gauge No. 36. (See note 33, p. 583.)

T. B. M. 84.—Is near *Lobdell, La.*, on *Viola plantation, West Baton Rouge Parish, La.*, in the south root of a 3-foot live-oak tree with top cut off, standing in the road about 1 meter from the inner base of the levee, about 2 meters west of the east yard fence and 44 meters east of the entrance to the plantation residence, about 250 meters below stone line No. 169. (See note 33, p. 583.)

T. B. M. 142.—Is near *Lobdell, La.*, on *Viola plantation, West Baton Rouge Parish, La.*, and is a flat stone and iron pipe, 840 meters from the levee and on the south bank of a large ditch; it is 359°, 572 meters from the sugar house.

P. B. M. XXXIII.—Is near *Lobdell, La.*, on *Belmont plantation, West Baton Rouge Parish, La.*, and is a granite post buried in front of the pillar at the northwest corner of the house of Mr. A. Guesnard.

T. B. M. 83.—Is near *Lobdell, La.*, *West Baton Rouge Parish, La.*, in an osage orange stump standing at the side of the road at the end of the hedge which forms the dividing line between Belmont and Lobdell plantations. (See note 33, p. 583.)

T. B. M. 82.—Is at *Lobdell, La.*, *West Baton Rouge Parish, La.*, 7 meters back of the rear corner of G. W. Ory & Co.'s store and Lobdell post-office building, on the downstream side of the lane leading back from the river; in the root toward the river of an osage orange stump standing one-half meter from the fence. (See note 33, p. 583.)

T. B. M. 80.—Is near *Lobdell, La.*, *West Baton Rouge Parish, La.*, 30 meters upstream from the road crossing the levee and leading back to the Allendale sugar mill; on the upstream root of an 8-inch china-berry tree just inside of fence back of the road back of the levee. (See note 33, p. 583.)

P. B. M. Allendale.—Is near *Lobdell, La.*, *West Baton Rouge Parish, La.*, 30 meters back of the fence back of the road back of the levee, 64 meters back of center of levee, 48 meters west of the road which crosses the levee and leads back to the sugar mill on Allendale plantation owned by Mr. Martin Kahoa, 14 meters south of the east and west fence which runs back of the first cabin nearest the road; in the southwest corner of the north portion of the mule lot, 0.47 meter east of the fence, 0.45 meter north of the northwest corner of the large barn, 9.3 meters west of the cistern. (See note 29, p. 583.)

P. B. M. XXXIV.—Is about half a mile above the store and post-office of *Devall* at *Grassmans Landing, West Baton Rouge Parish, La.*, and is a granite post in front of the house of Mr. B. Chamberlain, jr.

T. B. M. 75.—Is near *Devall, La.*, on *Batture plantation, West Baton Rouge Parish, La.*, 65 meters northeast of the dividing line between Batture and Clarkland plantations, on the south side of a live-oak grove in front of Mr. A. M. Kean's residence; in the east root of a 2½-foot pecan tree standing in line with the fence back of the road back of levee. (See note 33, p. 583.)

P. B. M. Solitude.—Is near *Devall, La., West Baton Rouge Parish, La., on Solitude plantation*, 240 meters below the square angle in the levee (at high-water gauge No 38), where it leaves the river and turns south across the point toward Devalls Landing; on the south side of the road, 9 meters south of the garden fence around the house of George Williams, colored, and 50 meters west of the levee; midway between two pecan trees, the nearest ones toward the levee in a row of three, distant 10 meters from a triangular blaze 4 feet above the ground on each, and facing the bench mark. (See note 29, p. 583.)

T. B. M. 74.—Is near *Devall, La., on Solitude plantation, West Baton Rouge Parish, La.*, 11 meters east of P. B. M. Solitude, on the south root of 3-foot pecan tree, the easterly one in a row of three. (See note 33, p. 583.)

T. B. M. 73.—Is near *Devall, La., on Solitude plantation, West Baton Rouge Parish, La.*, on the side toward the river of a sycamore tree standing inside of the yard fence of James Price (the observer of high-water gauge No. 38), 15 meters north of the north-west corner of the house. (See note 33, p. 583.)

T. B. M. 72.—Is near *Devall, West Baton Rouge Parish, La.*, about 1 500 meters above the square angle in the levee where high-water gauge No. 38 is situated; on side toward the river of a large cottonwood tree, with top broken off, standing back of the road back of the levee; 84 meters below the corner of the fence around the field in which stands a large cottonwood tree. (See note 33, p. 583.)

T. B. M. 70.—Is near *Walls, La.*, about 375 meters above the residence on Alford's *Rosehill plantation*, West Baton Rouge Parish, La.; nearly opposite the mouth of a lane on the south side of which is a church in a field; on a live-oak stump standing in the middle of the road back of levee. (See note 33, p. 583.)

B. M. 144.—Is near *Walls, La.*, about west of *Highland Landing*, West Baton Rouge Parish, La., 252 meters back of the new levee, 125 meters in front of the new railroad, 150 meters north of an east and west hedge fence, 10 meters north of an 18-inch tree; on the west side of a ditch and 4 meters south of the intersection of ditches, and is a 6 by 6 inch limestone monument marked U. S., with a hole in the center. The stone is leaning toward the ditch, and rod was held on the high point inside of the lower part of the letter S.

P. B. M. XXXV.—Is 125 meters below *Arbroth* store and post-office, West Baton Rouge Parish, La., 54 meters back from the inner base of the levee, 14 meters back of a small store, 1 meter below the fence, below tramway running back from river at *False River Landing, La.* The stone is marked thus:

U S
B □ M
1880

and was reported in good condition in 1900. (See note 32, p. 583.)

T. B. M. 65.—Is near *Arbroth, La.*, 1 000 meters above the present *Kelson Landing*, West Baton Rouge Parish, La., near the lower end of a pecan grove, on a large root on the back side of the large pecan tree nearest the levee on which high-water gauge No. 39 is situated. (See note 33, p. 583.)

B. M. 144.—Is near *Hermitage, La., on Wildwood plantation*, West Baton Rouge Parish, La., and is a stone post standing in the fence line back of the road back of the

levee and near the middle of the front side of the pecan grove around the site of the old Robert Clemon residence. The house has been destroyed, but the chimney was still standing in 1900.

T. B. M. 64.—Is about three-fourths of a mile below *Hermitage*, West Baton Rouge Parish, La., and just above a negro cabin; on the north root of a 3-foot gum tree, 4 meters inside of the fence on the south side of the road back of the levee. (See note 33, p. 583.)

P. B. M. XXXVI.—Is at *Hermitage*, West Baton Rouge Parish, La., 75 meters below the bank of the outlet of False River, on the right bank of the river. A 3-foot live-oak, bearing high-water gauge No. 40, stands 10 meters north, and a 2-foot live-oak stands 13 meters southwest, both bearing blazed triangles facing the stone, which is marked thus:

U S
B □ M
1880

The house that originally stood by the bench mark is destroyed. (See note 32, p. 583.)

T. B. M. 63.—Is near *Hermitage*, West Baton Rouge Parish, La., 149 meters above *Grand Bay Landing* warehouse, *Pointe Coupee Parish*, La., 10 meters back of the old levee, on the long northwest root of a 2-foot thorn tree about 4 feet from the trunk of the tree. (See note 33, p. 583.)

B. M. 182.—Is near *Anchor*, *Pointe Coupee Parish*, La., 214 meters below the cotton gin at *Cooks Landing*, which is the landing for *Anchor* post-office; two meters east of the ditch and 17 meters west of the west base of the old levee and is the highest point in a small square cut on the south corner of a 6 by 6 inch stone monument with top broken off projecting 8 inches out of ground.

T. B. M. 61.—Is near *Anchor*, *Pointe Coupee Parish*, La., 170 meters below the cotton gin at *Cooks Landing*, at the back edge of the road back of the old levee, in the top of a 4-inch honey-locust stump which joins a 6-inch honey-locust tree. (See note 33, p. 583.)

P. B. M. XXXVII.—Is on the building known as the *St. Claude Landing* warehouse (upper part used as a dwelling), *Pointe Coupee Parish*, La., near *Anchor*, owned by the heirs of Mr. Robin, and the only brick building in the vicinity, and is the upper edge of a horizontal notch cut in brick, nearly on the middle line of the front face and 5.4 feet above the ground.

T. B. M. 59.—Is three-fourths of a mile above *St. Claude Landing* warehouse, *Pointe Coupee Parish*, La., near *Anchor*, about 150 meters below a point in the road opposite an old sugar mill, on side toward the river of a 24-inch honey-locust tree standing in a square angle of the fence on the side of the road back of the levee. Levee B. M. 224 is on same tree. (See note 33, p. 583.)

T. B. M. 58.—Is in *Pointe Coupee Parish*, near *Bayou Sara*, *Felician Parish*, La., about 400 meters below high-water gauge No. 41, on the west root of a 2½-foot dead pecan tree standing in the middle of the road behind the levee. Levee B. M. 221 is on the same tree on the opposite side. (See note 33, p. 583.)

T. B. M. 57.—Is in *Pointe Coupee Parish*, near *Bayou Sara*, *Felician Parish*, La., 2 870 meters below P. B. M. XXXVIII on *Preston* plantation, on the south root of a

2-foot pecan tree standing in the middle of the road below the levee and the fence. (See note 33, p. 583.)

T. B. M. 56.—Is 1560 meters below P. B. M. XXXVIII, in Pointe Coupee Parish, near *Bayou Sara, Feliciana Parish, La.*, on a 2-foot thorn tree standing in the center of the road behind the levee. (See note 33, p. 583.)

P. B. M. XXXVIII = \triangle S. E. Base.—Is in Pointe Coupee Parish, La., about 1 mile below a point opposite *Bayou Sara, Feliciana Parish, La.*, on the right bank, on Preston plantation, 700 meters above the division line between Preston and Woodburn plantations; 94 meters back of the inner base of the levee, 14 meters west of the lower end of a deep hole in the pasture, and consists of the top of a copper bolt leaded in the top of a limestone monument 14 inches square, projecting 6 inches above ground. A blazed double thorn tree, 2 feet in diameter, stands 75 meters east by the roadside, and a blazed dead 2-foot thorn tree north 70° west, 44 meters.

T. B. M. 55.—Is in Pointe Coupee Parish, near *Bayou Sara, Feliciana Parish, La.*, and one-half mile below P. B. M. XXXIX, about 80 meters back from the river and the same distance above a clump of timber on the backside of a large cottonwood tree on the side of the levee toward the river. (See note 33, p. 583.)

P. B. M. XXXIX = \triangle N. W. Base.—Is in Pointe Coupee Parish, La., opposite Freehan's warehouse at *Bayou Sara, Feliciana Parish, La.*, and 800 meters below the ferry landing on the right bank and consists of the top of a copper bolt in a limestone monument 14 inches square, standing 2 feet above ground, marked U. S. on the west side and 1880 on the east side. The concrete bed has dirt partly washed out from beneath it, and it may have been disturbed, as it is at the top edge of the river bank.

B. M. 188.—Is in Pointe Coupee Parish, opposite *Bayou Sara, Feliciana Parish, La.*, 7 meters in front of a cotton gin, 30 meters below a road crossing the levee from the ferry landing, in the fence line back of the road back of the levee; and is top of a copper bolt in a stone post standing 8 inches out of ground; the bolt is flush with top of stone.

T. B. M. 53.—Is in Pointe Coupee Parish, near *Bayou Sara, Feliciana Parish, La.*, one-half mile below Scoot crevasse, about 200 meters below the junction of the levees and about 500 meters back of the right bank of the river on a root on face toward the river of 5-pronged cypress tree standing in the fence line back of the road back of the levee. Levee B. M. 192 is on the same tree. (See note 33, p. 583.)

B. M. 189.—Is 655 meters east of Red Store, now *Pointe Coupee* post-office, *Pointe Coupee Parish, La.*, on the right bank in an open field on Judge Cooley's plantation, on the south bank of a ditch, 200 meters from the levee, and is a flat stone and an iron pipe. The stone has no bolt in it; the rod was held on the top of the stone at the edge of the hole where the bolt should have been. There is no cap on the pipe.

P. B. M. XL.—Is 720 meters above Red Store, now *Pointe Coupee* post-office, *Pointe Coupee Parish, La.*, 445 meters below the Union Store, on the downstream side of the steps of the residence of Mr. N. Carmanche, on the right bank, 67 meters back of the new levee. (See note 32, p. 583.)

T. B. M. 50.—Is near *Pointe Coupee, Pointe Coupee Parish, La.*, 1010 meters above the Union Store and 350 meters above high-water gauge No. 42; on the side toward the river of a 3-foot live-oak tree standing 1 meter inside of the fence back of the road back of the levee on right bank. The tree is one of three standing in a triangular position. (See note 33, p. 583.)

T. B. M. 49.—Is near *Brooks, Pointe Coupee Parish, La.*, 80 meters below P. F. Bourgeois & Son's general store; on the side toward the river of a 5-foot pecan tree standing in the road 2 meters from the fence back of the levee. Levee B. M. 168 is on same tree. (See note 33, p. 583.)

P. B. M. XLI.—Is near *Brooks, Pointe Coupee Parish, La.*, on the right bank immediately back of a prominent angle in the levee around an old crevasse pool, at the downstream end of the steps leading to the gallery in front of the residence of Mr. Ed. Morrison. The stone is marked

U S

□

1880

(See note 32, p. 583.)

T. B. M. 47.—Is near *Brooks, Pointe Coupee Parish, La.*, 353 meters above P. B. M. XLI, on the south side of the road back of the levee, in the highest part of a large stump. (See note 33, p. 583.)

T. B. M. 46.—Is near *Brooks, Pointe Coupee Parish, La.*, near *Morganza crevasse*, on the right bank 210 meters above the angle in the levee which is opposite high-water gauge No. 43, on the north side of a $1\frac{1}{4}$ foot leaning willow tree standing on the south side of the road back of the levee. (See note 33, p. 583.)

B. M. $1\frac{1}{3}^7$.—Is near *Morganza, Pointe Coupee Parish, La.*, 500 meters above *Morganza crevasse*, in cottonwoods on the right bank, 80 meters outside of the piece of old levee known as Grand Levee, 350 meters outside of the outer base of the present main levee, 350 meters below a prominent angle in the same, 1 195 meters below the junction of the main levee and the old Grand Levee, where a watchman's station is located, known by a square enlargement of the levee for a cabin and levee materials, and is a flat stone and an iron pipe. The surrounding trees are blazed facing the pipe. The stone has no bolt in it; the rod was held in the center of the pipe.

T. B. M. 43.—Is near *Morganza, Pointe Coupee Parish, La.*, 1 mile above *Morganza crevasse*, on levee at watchman's station, known by a square enlargement of the levee for a cabin and levee materials, at junction of the old Grand Levee and the present main levee, 450 meters below the mouth of lane leading back along the lower side of *Morganza* plantation, and is top of the period after the date 1895 on the levee bench mark. (P. B. M. XLII at this junction is either covered up or destroyed.)

T. B. M. 40.—Is near *Morganza, Pointe Coupee Parish, La.*, 1 450 meters below the lane or State road leading back from *New Texas Landing*, at the top inner edge of levee, at an angle, and is the highest part of the rim around the hole of the levee bench mark, marked U. S. 1895.

T. B. M. 39.—Is near *Morganza, Pointe Coupee Parish, La.*, at *New Texas Landing*, *Pointe Coupee Parish, La.*, on Stone Line 156, in the line of fence on the south side of the State road leading back from the levee, on the east root of a $2\frac{1}{2}$ -foot cottonwood tree, 14 meters back from corner of the fence at the junction of the roads. (See note 33, p. 583.)

B. M. $1\frac{1}{3}^8$.—Is near *Morganza, Pointe Coupee Parish, La.*, on north side of the State road or lane leading back from *New Texas Landing, Pointe Coupee Parish, La.*, 279 meters west of a corner of the fences at the mouth of the lane, just back of the road back of the new levee, 1 meter south of the line of fence, and is a square marking

stone whose edges of stone have been chipped off. The copper bolt was gone and the rod was held on the highest point of the stone.

T. B. M. 38.—Is about 1 000 meters below *Raccourci, Pointe Coupee Parish, La.*, about 375 meters below a Catholic church, on the north side of the road, behind the levee, on the northwest root of an 18-inch sycamore tree. (See note 33, p. 583.)

T. B. M. 37.—Is at *Raccourci, Pointe Coupee Parish, La.*, in the yard of Ed. Lacour's residence, a little above and back of the levee from the store and post-office, on the south root of a 2-foot pecan tree, 58 meters in front of the house, on the upper side of the walk. (See note 33, p. 583.)

P. B. M. XLIII.—Is at *Raccourci, Pointe Coupee Parish, La.*, at the new house of Edgard Lacour, a little above and back of levee from the store and post-office, under the top front step to the gallery, about 1 foot to the left of the center; it was in front of the old house. (See note 32, p. 583.)

T. B. M. 35.—Is near *Lacour, Pointe Coupee Parish, La.*, about 3 000 meters above the residence of Edgard Lacour (distance taken along the levee). It is the top of the period after the date, 1895, on levee bench mark at the top edge of the levee at a prominent angle.

T. B. M. 33.—Is near *Lacour, Pointe Coupee Parish, La.*, on the Favorite plantation, about 15 meters inside of the northwest corner of the yard fence of Mr. V. Lacour's residence, on the north root of a 2-foot china-berry tree. (See note 33, p. 583.)

P. B. M. XLIV.—Is $2\frac{1}{2}$ miles below the town of *Williamsport, Pointe Coupee Parish, La.*, on Old River, and $1\frac{3}{4}$ miles above the *Ennis* Oil Mill, 220 meters back of fence, back of road, back of levee, back of Old River, at the house of Dr. A. A. Batchelor, at the lower side of the steps, in the angle where they join the gallery on the front of the house. (See note 32, p. 583.)

T. B. M. 22.—Is at *Williamsport, Pointe Coupee Parish, La.*, on Old River, 30 meters south of the blacksmith shop at the lower end of the town, on the south root of a 4-foot cottonwood tree on west side of road, back of levee. (See note 33, p. 583.)

T. B. M. 20.—Is about 400 meters below the house occupied by Mr. A. J. Noland, near *Smithland, Pointe Coupee Parish, La.*, on the east root of a $2\frac{1}{2}$ -foot pecan tree standing 3 feet west of north and south hedge fence on west side of road behind levee. The tree stands near where B. M. $1\frac{3}{4}$ should be. The bench mark pipe was pulled up and found lying by the side of the road. (See note 33, p. 583.)

P. B. M. Smithland.—Is 780 meters below *Smithland* post-office, *Pointe Coupee Parish, La.*, and 300 meters below where the road crosses the levee leading south from the landing at the plantation residence owned by Mr. Archie D. Smith and occupied by Mr. A. J. Noland, in the northeast corner of the yard, 1 meter from each fence, 30 meters north of the end and 4 meters east of the prolongation northward of a row of 6 large live-oak trees. (See note 29, p. 583.)

P. B. M. XLV.—Is at *Smithland, Pointe Coupee Parish, La.*, northeast of the warehouse in rear of which is Smithland post-office, 22 meters back of the right bank of the river, in a lot 3 meters north and west, respectively, of two fences. The stone is marked thus:

U S
B □ M
1880

(See note 32, p. 583.)

T. B. M. 17.—Is about 1 300 meters above *Smithland, Pointe Coupee Parish, La.*, on edge of the borrow pit at the back edge of the road back of the levee opposite a prominent angle in the levee at junction of the old levee leading southeast toward the river, on face toward the river of 5-inch thorn tree. (See note 33, p. 583.)

B. M. W. (Ewens, 1890).—Is at *Red River Landing, Pointe Coupee Parish, La.*, in the front yard, just to the left of gate as you enter, of Mr. Rodech's residence, back of levee, and is a copper bolt in a limestone slab, under the ground, with an iron pipe on top.

B. M. B. (Ewens, 1892).—Is at *Red River Landing, Pointe Coupee Parish, La.*, nearly in front (a little below) of Mr. G. W. Reagan's store on face toward the river of a large cypress. (See note 33, p. 583.)

B. M. D. (Ewens, 1896).—Is at *Red River Landing, Pointe Coupee Parish, La.*, on little knoll directly back of Mr. G. W. Reagan's residence, on large sycamore tree. (See note 33, p. 583.)

B. M. 14².—Is on the right bank about 1 mile above *Red River Landing, Pointe Coupee Parish, La.*, and 154 meters below the Catholic Church, in line with the center lane running back from the river, and just above the wagon road crossing the levee. It is a 6 by 6 inch limestone monument standing on inner slope of levee, 5 feet above the base.

T. B. M. 13.—Is near *Red River Landing, Pointe Coupee Parish, La.*, on the right bank, 840 meters above B. M. 14², 600 meters above the mouth of Old River (or Red River), and 35 meters back from right bank of Old River, on the east root of a 4-foot willow tree. (See note 33, p. 583.)

P. B. M. Carrs Point.—Is near *Red River Landing, Pointe Coupee Parish, La.*, on *Carrs Point Plantation, Concordia Parish, La.*, owned by Lewis Trager, 1 mile above the mouth of Old River (or Red River), in the line of fence running east and west on the south side of the road running in front of the cabins, 257 meters back from the right bank and 9½ meters south of south line of cabins, and consists of the top of a copper bolt cemented in the top of 6 by 6 inch marble monument projecting 10 inches from the ground, and marked thus:

U S
⊙
N O

T. B. M. 9.—Is in *Concordia Parish, La.*, near *Red River Landing*, 1½ miles above *Carrs Point Landing*, about 230 meters below a small levee standing square with the river bank, 10 meters back of main right bank and 2 meters back of road, on the base of a 15-inch sycamore tree, on face toward the river. (See note 33, p. 583.)

T. B. M. 6.—Is opposite *Tarbert Landing, Wilkinson County, Miss.*, in *Concordia Parish, La.*, 2 500 meters below P. B. M. L. 5 meters from the top of the right bank on side toward the river of a 2½-foot locust tree. (See note 33, p. 583.)

P. B. M. L. = △ S. W. Base.—Is about 2 miles below *Point Breeze, Concordia Parish, La.*, on the land of B. M. Lemley, of Vicksburg, Miss., 60 meters above and 76 meters back of a 1½-story house on road, top of right bank, 21 meters above the lane running back from the river, 7 meters back of turn row or headland in cotton field, and 18 meters toward the river from the corner of garden, and consists of the top

of a copper bolt in the top of a stone monument 14 inches square on top, set flush with the ground.

P. B. M. LI = \triangle N. E. Base.—Is 1 mile below the upper end of *Point Breeze, Concordia Parish, La.*, on land of G. W. Reagan, 80 meters above the line fence between Reagan and Lemley, and about 45 meters back of the road along the top of the main right bank, 7 meters south of the southwest corner of the garden fence back of the negro cabin owned by Eli Lennox, and 23 meters southwest of the cabin, and consists of the top of a copper bolt in the top of a stone monument, 14 inches square on top, standing nearly flush with the ground in a cotton row.

T. B. M. 5.—Is near *Point Breeze, Concordia Parish, La.* It is 565 meters below P. B. M. LI = \triangle N. E. Base on the side of north and south road along the east side of a cotton field, on the west root of a 3-foot sycamore stump. There is timber east of the road. (See note 33, p. 583.)

T. B. M. 4 = High-water gauge B. M. 49.—Is 710 meters above P. B. M. LI or \triangle N. E. Base and 900 meters below the upper end of *Point Breeze, Concordia Parish, La.*, a little above and in front of a large cabin occupied by Rev. Rickson Jones (colored), the observer of the gauge, in the inner face of a 6-inch thorn tree, one of three standing together on the slope of the main right bank, back of willow and cottonwood timber. The gauge is nailed to the outer one.

P. B. M. Point Breeze.—Is on *Point Breeze, Concordia Parish, La.*, 66 meters below B. M. 141, and about 335 meters below the upper end of Point Breeze, along the high bank, 3 meters outside of the road and 8 meters back from the top of the main right bank. The cap on the pipe is about 9 inches above the ground. (See note 29, p. 583.)

B. M. 141.—Is 270 meters below the upper end of *Point Breeze, Concordia Parish, La.*, in the south end of a lane on the top of the main right bank, immediately east of the second cabin below the upper end of the point, occupied by Uriah Pollock, and consists of the top of a small square cut on the top of 6 by 6 inch marking stone, projecting 6 inches from the ground.

P. B. M. XLVIII.—Is about 400 meters below the present landing for *Fort Adams, Wilkinson County, Miss.*, about 30 meters above a ravine, on the small flat on the side of the bluff, between and a little back of two small cabins on the flat and 50 meters back of a large house standing at foot of slope. In 1900 it was reported that the store originally near the stone was gone, that the bluff above and below the stone had been sliding into the river, but it seemed stable around the stone, and that the stone was in good condition. (See note 32, p. 583.)

T. B. M. 1.—Is about 600 meters below the lower end of the village of *Fort Adams, Wilkinson County, Miss.*, 635 meters below P. B. M. Fort Adams, and 1 300 meters above the present landing on the river of Fort Adams; on east root of a 2-foot willow tree standing in road at foot of bluff. (See note 33, p. 583.)

P. B. M. Fort Adams.—Is in the lower end of the village of *Fort Adams, Wilkinson County, Miss.*, in the front yard of Mr. H. L. Stutzmans, on the east side of Main street and north side of the street running east to the foot of the bluffs, $3\frac{1}{2}$ meters east of the northeast corner of the street intersection, 3 meters south of the southwest corner of the house, 69 meters below the south end of the bridge over a ravine. (See note 29, p. 583.)

P. B. M. XLIX.—Is at *Fort Adams, Wilkinson County, Miss.*, just above the

corners at the upper end of the village, at southwest corner of the house of Mr. Baker, 455 meters above P. B. M. Fort Adams. The stone was reported in good condition in 1900. (See note 32, p. 583.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN CINCINNATI, OHIO, AND SOMERSET, KY.

Y₄.—*Cincinnati, Ohio.* (See p. 665, App. 8, Report for 1899.)

Z₄.—*Cincinnati, Ohio.* (See p. 665, App. 8, Report for 1899.)

A₁.—*Ludlow, Kenton County, Ky.* (See p. 665, App. 8, Report for 1899.)

A.—Is a copper bolt at *Newport, Campbell County, Ky.*, at the south end of the Newport and Cincinnati bridge (Louisville and Nashville Railroad), on the east end of bridge seat of first pier south of overhead superstructure, 0.19 meter north of retaining wall, 0.59 meter west of east end of bridge-seat stone, and 0.3 meter below surface of sidewalk. (See note 2, p. 580.)

U. S. E.—Is in *Newport, Campbell County, Ky.*, 3 feet west of Cincinnati, Newport and Covington Electric Railway, at the south end of the Newport and Cincinnati bridge on end of stone of coping, about 12 inches above level of street, being the highest point in a square hole cut in the surface of the stone, 9 inches east of west face, 8 inches south of north face, and 6 inches north of iron pole set in center of stone. (See note 3, p. 580.)

B.—Is in *Covington, Kenton County, Ky.*, on the south side of Third street, east of the north entrance to the Covington post-office, being a copper bolt in the first course of limestone below the water table 1.2 meters above the surface of the ground, 6 inches west of east end of first stone east of stairway. (See note 1, p. 580.)

C.—Is a square hole cut at the north side of depot at *Ludlow, Kenton County, Ky.*, on the south abutment of the viaduct under the track at the east end of the abutment, 2.2 meters below track, on the second step of the abutment, 8 inches west of east face, 4½ inches south of north face, and 17 inches east of first step. (See note 4, p. 580.)

D.—Is at *Crescent Springs, Kenton County, Ky.*, at overhead road crossing east of the depot, 2.4 meters south of south rail of track, about level with the rail on the center of the large base stone supporting the center of bridge, 0.15 meter back of edge of stone, 0.5 meter east of west center pier, and 0.6 meter west of east center pier. (See note 4, p. 580.)

E.—Is in the village of *Erlanger, Kenton County, Ky.*, on the Town Hall building owned by Baker & Scott, on the northeast corner of Lexington and Commonwealth avenues, on the top of an iron plate covering a foundation stone, 0.25 meter west of the corner iron column and one-half inch north of south face, being center of square cut in the surface of the plate with a cold chisel.

F.—Is 125 meters north of depot at *Dixon, Boone County, Ky.*, on the line of Cincinnati, New Orleans and Texas Pacific Railway, 2.25 meters west of west rail and 0.25 meter above it, on a large capstone between brick piers supporting a bridge, 7 inches back from face and 1.28 meters south of south side of center pier. (See note 4, p. 580.)

G.—Is a copper bolt 85 meters west of the track and 300 meters south of the depot of Cincinnati, New Orleans and Texas Pacific Railway at *Richwood, Boone County, Ky.*, at northeast corner of the water table of a brick dwelling belonging to the heirs of Reuben Connors, 0.96 meter south of north corner of house. (See note 1, p. 580.)

H.—Is at an overhead wagon bridge 600 meters south of Cincinnati, New Orleans and Texas Pacific Railway depot at *Walton, Boone County, Ky.*, 1.3 meters west of and 1.8 meters above the west rail, on top of a wall between pillars supporting the bridge, 1.92 meters north from south wall and 1.15 meters back from the face. (See note 4, p. 580.)

I.—Is on a culvert in Kenton County, about $1\frac{1}{2}$ miles north of *Crittenden, Grant County, Ky.*, opposite George Slett's, on line of Cincinnati, New Orleans and Texas Pacific Railway, 130 feet north of milepost "Cin. 23," 28 feet east of east rail, on the coping stone at the east end of the culvert, 0.42 meter south of center of culvert and $5\frac{1}{2}$ inches back from its face. (See note 4, p. 580.)

J.—Is a copper bolt in the south face of foundation of Joe Collins's house in *Crittenden, Grant County, Ky.*, 50 meters west of the Cincinnati and Lexington turnpike, 2.18 meters east of the southwest corner of the house, in the first course below the baseboard and 122 millimeters below the same. (See note 1, p. 580.)

K.—Is 210 meters below the Cincinnati, New Orleans and Texas Pacific Railway depot at *Sherman, Grant County, Ky.*, 4.2 meters east of the east rail, on the northwest corner of the capstone of the northwest pillar of a water tank (311). (See note 4, p. 580.)

L.—Is a horizontal chisel mark cut in the end of a copper bolt leaded horizontally into a retaining wall on the west side of the Lexington turnpike, in front of Lottie Bradford's residence at *Dry Ridge, Grant County, Ky.*, 1.15 meters south of the iron gate, 0.56 meter below the coping of the wall and 0.54 meter above the ground.

M.—Is a copper bolt in the north face of the foundation of the county record office at *Williamstown, Grant County, Ky.*, 3.11 meters east of the northwest corner of the building, 0.66 meter above the brick walk, 0.39 meter below the lower edge of the sandstone water table, and about 50 feet west of Main street (Lexington turnpike), on the south side of alley. (See note 1, p. 580.)

N.—Is on the south side, at the west end, of stone culvert 100 meters north of Cincinnati, New Orleans and Texas Pacific Railway station at *Mason, Grant County, Ky.*, on a step 0.623 meter below the coping stone and 6 inches back from the face. (See note 4, p. 580.)

O.—Is at overhead wagon bridge No. 12, 0.7 mile north of *Blanchett, Grant County, Ky.*, on the line of Cincinnati, New Orleans and Texas Pacific Railway, 2.1 meters east of east rail and 0.5 meter above it, and 3.62 meters south of the north end of the foundation, on fourth capstone from the north end and 0.15 meter from its west face. (See note 4, p. 580.)

P.—Is a copper bolt at *Corinth, Grant County, Ky.*, about 70 meters west of the depot on the west side of Main street, in the south side of the foundation of a store owned by Joe S. Horner, 5.2 meters west of the southeast corner, 1.49 meters above the ground and 0.25 meter below the baseboard. (See note 1, p. 580.)

Q.—Is a horizontal V-shaped groove in the bottom of a square cut in the north face of the store of R. Lancaster at *Hinton, Scott County, Ky.*, 80 feet west of the tracks and 50 feet south of the Cincinnati, New Orleans and Texas Pacific Railway station, 0.31 meter west of east corner of the building, 0.7 meter above the ground and 0.2 meter below the baseboard. (See note 4, p. 580.)

R.—Is a copper bolt at *Sadieville, Scott County, Ky.*, about 2 meters below the level of the Cincinnati, New Orleans and Texas Pacific Railway, on the south abutment of an iron bridge over a street, on west end of the top through course below the bridge seat stone, midway between the north and south faces of the stone and 8 inches west of west face of the bridge seat stone. (See note 2, p. 580.)

S.—On a viaduct or culvert of the Cincinnati, New Orleans and Texas Pacific Railway, $3\frac{1}{4}$ miles south of *Sadieville, Scott County, Ky.*, on the north side of the west end, on the northwest corner of a large coping stone, 10 inches from the west face and 6 inches from the north face. (See note 4, p. 580.)

T.—Is 50 meters north of the Cincinnati, New Orleans and Texas Pacific Railway station at *Rogers Gap, Scott County, Ky.*, on the north end of the west side of a culvert under the track, 3 inches east of the west face and $12\frac{1}{2}$ inches south of the north face. (See note 4, p. 580.)

U.—Is three-fourths of a mile south of *Kinkaid, Scott County, Ky.*, on the south abutment of the east end of bridge No. 15, over Dry Run Creek, on the coping stone of the abutment, midway between its north and south faces, 18 inches west of the east face and 2 meters below the Cincinnati, New Orleans and Texas Pacific Railway tracks. (See note 4, p. 580.)

V.—Is at overhead bridge No. 19, three-fourths of a mile north of Cincinnati, New Orleans and Texas Pacific Railway station at *Georgetown, Scott County, Ky.*, on the coping stone of a pier, 2.26 meters west of the west rail and 3.15 meters north of its south end, at the same elevation as the top of rail. (See note 4, p. 580.)

W.—Is a copper bolt 75 feet southwest of the Cincinnati, New Orleans and Texas Pacific Railway station at *Georgetown, Scott County, Ky.*, on the northeast corner of the foundation of the warehouse of E. N. Offutt & Son, on the west side of Maddox street, 110 feet north of Jackson street, in the north face of the foundation, 6 inches west of the corner and 0.83 meter above the ground. (See note 1, p. 580.)

X.—Is 12 meters north of milepost 71, 590 meters north of Cincinnati, New Orleans and Texas Pacific Railway station at *Donerail, Fayette County, Ky.*, on northeast corner of a coping stone over the east end of an arched culvert under the track, 8 inches south of the north face and 17 inches west of the east face. (See note 4, p. 580.)

Y.—Is 175 meters south of the Cincinnati, New Orleans and Texas Pacific Railway station at *Greendale, Fayette County, Ky.*, on the northwest corner of a coping stone over an arched culvert under the tracks, 10 inches east of the west face and 6 inches south of the north face. (See note 4, p. 580.)

Z.—Is 150 meters south of the Cincinnati, New Orleans and Texas Pacific Railway station at *Hillenmeyer, Fayette County, Ky.*, on the west end of the south side of the Cincinnati, New Orleans and Texas Pacific Railway trestle over a wagon road, on a bridge-seat stone, 6 inches south of its north face and 10 inches east of its west face. (See note 4, p. 580.)

A₁.—Is a brass bolt at the northeast corner of North Main and Maxville streets, *Lexington, Fayette County, Ky.*, on Dr. H. A. Phillips's drug store, at the east stairway entrance, in the center of the west end of the door stone, 5 inches east of its west end and 4 inches above the concrete walk. (See note 2, p. 580.)

B₁.—Is on the south side of the viaduct under Cincinnati, New Orleans and Texas Pacific Railway in front of Bedford's farm, 3.8 miles south of *Lexington, Fayette County,*

Ky., on the second step below the bridge-seat stone, $3\frac{1}{2}$ inches from the front face of the first step, 10 inches north of south face of stone and 10 inches west of east face. (See note 4, p. 580.)

C₁.—Is on the north side of west end of Lyne's arched culvert, 340 meters south of the Cincinnati, New Orleans and Texas Pacific Railway depot at *Brannon, Jessamine County, Ky.*, on the first step, 5 inches west of the capstone and 5 inches north of its south face. (See note 4, p. 580.)

D₁.—Is on the Cincinnati, New Orleans and Texas Pacific Railway viaduct over Catnip Hill pike, 1.8 miles south of *Brannon, Jessamine County, Ky.*, on the north side of the west end, on the first step below bridge-seat stone, 4 inches from its west face stone and 15 inches north of the south face of the step. (See note 4, p. 580.)

E₁.—Is 150 meters north of the depot at *Nicholasville, Jessamine County, Ky.*, on the top foundation stone of an overhead wagon bridge, 1.6 meters east of and 8 inches above the east rail of the Cincinnati, New Orleans and Texas Pacific Railway, 2.3 meters south of the north end of the foundation, about midway between the ends of the second stone, $6\frac{1}{2}$ inches east of the west face of the stone, and 6 inches west of bottom stringer of bridge. (See note 4, p. 580.)

F₁.—Is a brass bolt in the court-house at *Nicholasville, Jessamine County, Ky.*, in the first stone of the water table east of the corner stone at the northwest corner of the main building, midway between the upper and lower edges, 1 meter above the ground and 7 meters east of corner. (See note 1, p. 580.)

G₁.—Is 50 meters south of the Cincinnati, New Orleans and Texas Pacific Railway depot at *Jessamine, Jessamine County, Ky.*, on the viaduct over Lass Mill pike, at the south side of the east end, on a bridge-seat stone, 8 inches east of the coping stone, 18 inches south of the north face and 18 inches west of the east face of the bridge-seat stone. (See note 4, p. 580.)

H₁.—Is at *Wilmore, Jessamine County, Ky.*, 60 meters northwest of the Cincinnati, New Orleans and Texas Pacific Railway depot, on south side of the main cross street, at the east side of the entrance to Wilmore Mercantile Company's store, on the northeast corner of an iron plate under an iron column; being the top surface circumscribed by two lines $\frac{1}{8}$ inch deep, cut at right angles with a cold chisel.

I₁.—Is a square cut on a shelf of rock *in situ*, $2\frac{3}{4}$ miles north of *High Bridge, Jessamine County, Ky.*, 54 meters north of the overhead wagon bridge of Pleasant Hill and Jessamine County pike, 0.27 meter below and 1.85 meters west of the west rail of the track of the Cincinnati, New Orleans and Texas Pacific Railway. An arrow is cut in the side of the rock 10 inches above the bench mark and pointing to it.

J₁.—Is a brass bolt, 70 meters south of the depot at *High Bridge, Jessamine County, Ky.*, on the west side of bridge over the Kentucky River, at the north end, on the coping stone of the abutment, 0.25 meter east of the west face, 1.56 meters north of the south face, 0.5 meter below, and 2.75 meters west of the west rail of Cincinnati, New Orleans and Texas Pacific Railway. (See note 2, p. 580.)

K₁.—Is a brass bolt, $\frac{1}{4}$ mile south of *High Bridge, Mercer County, Ky.*, 36 meters south of the south side of the south pier of proposed suspension bridge over the Kentucky River, 2.62 meters west of and 1.34 meters above the west rail, in the center of old drill hole made when the rock was blasted out for the cut of Cincinnati, New Orleans and Texas Pacific Railway. (See note 1, p. 580.)

L₁.—Is about midway between *High Bridge* and *Burgin* in *Mercer County, Ky.*, $\frac{1}{8}$ mile south of the milepost "Cin. 103," 160 meters north of the Curdville road crossing, on a coping stone of box stone culvert of Cincinnati, New Orleans and Texas Pacific Railway, on the east side of the north end, 12 inches from north face, and 12 inches from both east and west faces. (See note 4, p. 580.)

M₁.—Is a brass bolt at *Burgin, Mercer County, Ky.*, about 300 feet southwest of the southwest corner of the Cincinnati, New Orleans and Texas Pacific Railway depot, in the east foundation wall of the Burgin Roller Mills, owned by Cook & Spencer, 33 feet north of the southeast corner, 22 inches above the ground and $4\frac{1}{2}$ inches below the tin siding. (See note 1, p. 580.)

N₁.—Is at *Burgin, Mercer County, Ky.*, 330 meters east of the Cincinnati, New Orleans and Texas Pacific Railway, on the north side of Main street, 35 feet east of the east line of Maple street, on the east end of an iron base plate under a window of the J. P. Miller Building, 6 inches west of the east buttress close to the front edge of the plate; being the surface of the plate within a square one inch on a side, cut with a cold chisel.

O₁.—Is on a shelf of rock *in situ* in *Faulconer, Boyle County, Ky.*, 168 meters south of the center of the road crossing, 7.55 meters west of the west rail of the main track of Cincinnati, New Orleans and Texas Pacific Railway, 32 millimeters above the grade of track, 24 meters west of the center of the stone wall at the east boundary of railway right of way, and 96 meters north of the southern switch block of the siding, and is a square hole cut in the rock, letters U S G S.

P₁.—Is on the east side at the north end of a culvert under Cincinnati, New Orleans and Texas Pacific Railway, 2.3 miles north of *Danville*, in *Boyle County, Ky.*, 16 meters north of the J. C. Cowell road crossing, on a coping stone, 0.3 meter below and 2.1 meters east of the east rail, 93 millimeters west of the east face and 318 millimeters south of the north face of the stone. (See note 4, p. 580.)

Q₁.—Is a brass bolt 46 meters south of the intersection of Depot and Main streets, in *Danville, Boyle County, Ky.*, in the northwest corner of the foundation of the Theological Building of Center College, in a large stone, 31 inches below the water table, 33 inches above the ground, $18\frac{1}{4}$ feet west of a doorway and $16\frac{1}{2}$ feet east of the northwest corner of building. (See note 1, p. 580.)

R₁.—Is in a rock cut about 0.8 mile north of *Junction City, Boyle County, Ky.*, 101 meters south of the yard-limit post, 43 meters north of milepost "Cin. 117," 2.16 meters west and 30 millimeters above the west rail. It is marked by an arrow 1.25 meters above and pointing toward it. (See note 4, p. 580.)

S₁.—Is at bridge No. 41, $1\frac{1}{4}$ miles south of *Junction City*, in *Lincoln County, Ky.*, 122 meters south of the county line of Lincoln and Boyle counties, 59 meters south of a water tank, on line with the north face of the south abutment of the bridge, 3.25 meters west and 2.86 meters below west rail, on a coping stone of the south end of the circular dam of a reservoir. (See note 4, p. 580.)

T₁.—Is on a solid shelf of rock *in situ*, at the Bowen Coal Chutes, about $2\frac{3}{4}$ miles north of *Moreland*, in *Lincoln County, Ky.*, 212 meters north of the north end of bridge No. 43, 90 meters north of a water-tank standpipe, 6 meters north of the second chute from north end, 1.57 meters west and 0.07 meter above the west rail of Cincinnati, New Orleans and Texas Pacific Railway. It is marked by an arrow 7 inches above and pointing to it. (See note 4, p. 580.)

U₁.—Is a brass bolt about 230 meters southeast of the Cincinnati, New Orleans and Texas Pacific Railway depot at *Moreland, Lincoln County, Ky.*, 45 meters west of the west rail, in the east side of the brick foundation of B. P. Shewmaker's residence, 10½ inches above the ground, 4 inches below the weatherboarding, 8¾ feet north of the southeast corner, and 11¾ feet south of the northeast corner. (See note 1, p. 580.)

V₁.—Is on the east side of the south abutment of bridge No. 45, over Rolling Fork Creek, 2 miles north of *McKinney* and 2.8 miles south of *Moreland, Lincoln County, Ky.*, 4 inches back from the east face of the abutment, 3 meters south of the northeast corner and 0.83 meter below rail. (See note 4, p. 580.)

W₁.—Is a brass bolt 255 meters south of the depot at *McKinney, Lincoln County, Ky.*, in the center of a rock cut, on the largest plane-faced rock, surface 7 by 8 feet, at the west side, 2.02 meters from and 1.03 meters above the west rail. (See note 1, p. 580.)

X₁.—Is on the south abutment of bridge No. 47, at Green River, 2.3 miles south of *McKinney, Lincoln County, Ky.*, at the east end of the bridge, just west of the south end of overhead truss, on a bridge seat stone, 6 inches north of the coping, 17 inches east of the west face and 1.2 meters west of the east face. (See note 4, p. 580.)

Y₁.—Is 3.2 miles north of *Kings Mountain, Lincoln County, Ky.*, at the south end of South Fork trestle, on the east end of the lower shelf of the south abutment supporting iron stringers, 1.45 meters below and 1.2 meters east of the east rail, 6.5 meters from the south end of the abutment, 4 inches west of the east face and 21 inches south of the north face. (See note 4, p. 580.)

Z₁.—Is a brass bolt 506 meters north of the depot at *Kings Mountain, Lincoln County, Ky.*, at the south end of tunnel No. 2, 1.06 meters above and 1.95 meters east of the east rail, in the south face of the wall and 8 inches east of the corner. (See note 1, p. 580.)

A₂.—Is 316 meters south of the depot at *Waynesburg, Lincoln County, Ky.*, 3.74 meters west of and 1.28 meters below the west rail, on the south end of a large coping stone of a stone box culvert, 7½ inches east of the west face and 7½ inches north of the south face. (See note 4, p. 580.)

B₂.—Is a brass bolt 725 meters north of the depot at *Eubank, Lincoln County, Ky.*, on the west end of a heavy stone box culvert, 4.4 meters west of and 2.17 meters below the west rail, in a heavy covering stone below the coping, 3½ inches south of the south wall and 8 inches above the opening. (See note 1, p. 580.)

C₂.—Is 200 meters south of the center of the station platform at *Floyd, Pulaski County, Ky.*, just north of a road crossing, on the west side of the south end of a very large arched culvert or viaduct, on the second step below the coping, about 11 meters west of and 4.6 meters below the west rail, midway between the west face of first step and edge of the second step, and 5½ inches south of the north face. (See note 4, p. 580.)

D₂.—Is 0.3 mile north of *Pulaski, Pulaski County, Ky.*, 7.3 meters east of and 3.9 meters below the top of the east rail on the east end of a culvert in front of George Shumer's farm, 1 foot from the east edge and 2¾ inches south of the north face. (See note 4, p. 580.)

E₂.—Is a brass bolt 172 meters west of the depot at *Science Hill, Pulaski County, Ky.*, in the south side, at the west end of foundation of the Methodist Episcopal Church, 4 feet 2 inches east of southwest corner, 11 inches below the weatherboarding, and 2 feet 3 inches above the ground. (See note 1, p. 580.)

F₂.—Is 1 mile south of the depot at *Norwood, Pulaski County, Ky.*, on the south side at the east end of an arched stone culvert, on the first step below the coping, 6 inches west of the east face, $5\frac{1}{2}$ inches south of the north face and about 3.4 meters below the top of the east rail. (See note 4, p. 580.)

G₂.—Is a brass bolt about $1\frac{3}{4}$ miles north of *Somerset, Pulaski County, Ky.*, in a rock cut, 271 meters north of milepost 156, 306 meters north of the center of a road crossing, on the largest plane-faced rock *in situ*, 75 feet from the north end and 110 feet from the south end of the cut, 2.9 meters west and 0.8 meter above the west rail. (See note 1, p. 580.)

A₅.—*Somerset, Pulaski County, Ky.*

B₅.—*Somerset, Pulaski County, Ky.*

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN SOMERSET, KY., AND
KNOXVILLE, TENN.

A₅.—Is in *Somerset, Pulaski County, Ky.*, on the east side of an arched stone culvert about 200 yards north of the Cincinnati, New Orleans and Texas Pacific Railway depot, on the top course of masonry, 5 inches from the edge of the course and 20 inches east from the south angle formed by the culvert and a wall, 15 inches from the lower bent sill of the trestle and near the batter post, north end of the siding. The batter post is blazed at its inner edge, where it connects with bent sill. (See note 3, p. 580.)

B₅.—Is at *Somerset, Pulaski County, Ky.*, near the center of a large sandstone in the second course from the sidewalk under the column supporting north part of the arch at the entrance of the Cumberland Hotel. The bench mark is the intersection of two lines on the head of a copper bolt leaded into the stone.

C₅.—Is on the water tank south of the roundhouse at *Somerset, Pulaski County, Ky.*, on the top surface of the second sandstone block from the top supporting the northeast one of the four inner columns under the tank, 1 inch from the north edge and 3 inches from the east edge of the block. (See note 3, p. 580.)

D₅.—Is near *Somerset, Pulaski County, Ky.*, about 20 rails south of the railroad sign "Corporation Somerset Line," in the top of a large rock *in situ*, 30 feet north of the telegraph pole marked 15/159, 22 feet north of a signpost marked $\frac{W}{X}$, 12 feet east from the rail of the east track and 1 foot from the west edge of the rock, and in line between the middle two of four drill holes, used in breaking a piece from the rock. (See note 5, p. 580.)

E₅.—Is on a rock on the Cincinnati, New Orleans and Texas Pacific Railroad right of way, about one-half mile north of two tunnels and about 2 miles north of *Burnside, Pulaski County, Ky.*, near the south end of a large cut, 6 rails north of a post marked CHA 172 CIN 163, and across the track from a signpost marked $\frac{x}{w}$, about 8 feet from the outer rail on a curve and 3 inches from the edge of the rock nearest the rail. (See note 5, p. 580.)

F₅.—Is at *Burnside, Pulaski County, Ky.*, on a rock *in situ*, 8 paces south of a block-signal alarm near the station, 9 paces from the nearest rail, 8 inches from a stone wall, and 2 inches from each side of an angle on the top surface of the rock. (See note, 5 p. 580.)

G₅.—Is about one-half mile north of *Sloans Valley, Pulaski County, Ky.*, on the top surface of the small bridge seat south of tunnel No. 5 on the Cincinnati, New

Orleans and Texas Pacific Railroad, on the east stone of the south abutment and 6 inches from the east and south edges of the stone. (See note 5, p. 580.)

H₅.—Is on the bridge seat at the south end of the long trestle No. 61 of the Cincinnati, New Orleans and Texas Pacific Railroad, north of *Alpine, Pulaski County, Ky.*, on the east side of the track and 2 inches from the east and north edges of the stone. (See note 5, p. 580.)

I₅.—Is a stone post set just back of the railroad right-of-way post opposite the Cincinnati, New Orleans and Texas Pacific Railroad station at *Greenwood, Pulaski County, Ky.* (See note 6, p. 580.)

J₅.—Is at *Flat Rock, Pulaski County, Ky.*, about 150 feet north of the Cincinnati, New Orleans and Texas Pacific Railroad station, 6 feet east of the second telegraph pole north of the station, and about 6 feet below the level of the railroad track. (See note 6, p. 580.)

K₅.—Is at *Whitley, Pulaski County, Ky.*, in line with and between the first and second telegraph poles north of T. J. Wilson's store, 6 feet from the first pole and 25 feet east of the railroad track, across the tracks from a large wooden water tank, near a mill, three telegraph poles south of the railroad station. (See note 6, p. 580.)

L₅.—Is at *Pine Knot, Whitley County, Ky.*, on the right of way of the Cincinnati, New Orleans and Texas Pacific Railroad, about 75 yards south of the station, on the opposite side of the track, 3 feet from the fence and 20 feet from the nearest rail of the siding. Across the tracks from it are three large trees close together and in a line parallel to the tracks. (See note 6, p. 580.)

M₅.—Is near *Strunk, Whitley County, Ky.*, about one-half mile north of *Isham, Tenn.*, on a stone forming the bridge seat on the east side of the north abutment of trestle No. 71 of the Cincinnati, New Orleans and Texas Pacific Railroad, about 3 inches from the south edge and 2 inches from the east edge of the stone. (See note 5, p. 580.)

A.—Is about three-fourths mile above *Winfield, Scott County, Tenn.*, on the top stone at the west side of the southern of the two piers near the middle of trestle No. 74 of the Cincinnati, New Orleans and Texas Pacific Railroad, and 2 inches from the west edge and 3 inches from the north edge of the stone. (See note 5, p. 580.)

B.—Is on the railroad right of way about 100 feet south of the Cincinnati, New Orleans and Texas Pacific Railroad station at *Oneida, Scott County, Tenn.*, about 40 feet north of the tracks and 75 feet west from two large trees opposite the station. (See note 6, p. 580.)

C.—Is on the right of way of the Cincinnati, New Orleans and Texas Pacific Railroad at *Helenwood, Scott County, Tenn.*, about 40 feet west of the southwest corner of the station, 2 feet from the fence, 35 feet from the siding, and about 75 feet south of Mrs. Voss's boarding house. (See note 6, p. 580.)

D.—Is at *New River, Scott County, Tenn.*, on a sandstone block supporting the northernmost one of the western two of twelve wooden columns under the tank, $\frac{1}{2}$ inch each way from the north and west edges of the stone. (See note 5, p. 580.)

E.—Is 1 mile south of *Robbin, Scott County, Tenn.*, just north of the post marked "CHA 115," on a stone of the top course of masonry on the east side of the south abutment of trestle No. 82 of the Cincinnati, New Orleans and Texas Pacific Railroad, one-half inch each way from east and north sides of stone. (See note 5, p. 580.)

F.—Is just south of *Glen Mary, Scott County, Tenn.*, on a stone about 5 feet square, which supports the trestle work of bridge No. 84 of the Cincinnati, New Orleans and

Texas Pacific Railroad, on the east side of the track, on top course of masonry of the north abutment of the bridge, $3\frac{1}{2}$ inches from the west and 3 inches from the north edge of stone. (See note 5, p. 580.)

G.—Is a stone post at *Sunbright, Morgan County, Tenn.*, on the railroad right of way, 7 feet north of the first telegraph pole west of the one nearly opposite the station, which is marked $\frac{2\frac{1}{2}}{3}$, and between two poles near battery station 241 of the block-signal system. (See note 6, p. 580.)

H.—Is at *Annadel, Morgan County, Tenn.*, about 100 yards north of the station, on the most southern stone of the top course of masonry of the west wall of the south bridge head of trestle No. 86 of the Cincinnati, New Orleans and Texas Pacific Railroad over Rock Creek, 1 inch from the north and 1 inch from the west edge of the stone. (See note 5, p. 580.)

I.—Is on the railroad right of way of the Cincinnati, New Orleans and Texas Pacific Railroad at *Lancing, Morgan County, Tenn.*, in the southeast corner of a small plot of ground about 200 feet south of the station and 40 feet west of the railroad track, $2\frac{1}{2}$ feet from the east and $2\frac{1}{2}$ feet from the south fence of the inclosure. (See note 6, p. 580.)

J.—Is near *Nemo* and 5 miles north of *Oakdale, Morgan County, Tenn.*, near telegraph pole $\frac{3}{4}7$, on the east pier in the center of covered bridge No. 90 of the Cincinnati, New Orleans and Texas Pacific Railroad, near the center of the semicircumference of the top stone of the circular pier, and about $2\frac{1}{2}$ inches from the edge. (See note 3, p. 580.)

K.—Is at *Oakdale, Morgan County, Tenn.*, on the outer angle of a fence surrounding the Babahatchie Inn, about 75 feet from the northeast corner of the inn and about 75 feet from the northwest corner of the depot, which is across the tracks, 25 feet from the nearest rail and 8 feet below the grade. (See note, 6, p. 580.)

L.—Is about 200 yards south of the station at *Oakdale, Morgan County, Tenn.*, on the west side of the north pier of a bridge over a small creek running into Emory River, about 6 inches from the south and west edges of the stone upon which it is cut. (See note 3, p. 580.)

A₂.—Is near *Harriman Junction, Morgan County, Tenn.*, on the north abutment of the Cincinnati, New Orleans and Texas Pacific Railroad bridge over the Emory River, on the west side of the tracks, on the first stone of the bridge seat course east of the stone supporting the bridge, 42 centimeters west of the corner of the retaining wall, and on line with the face of the retaining wall. (See note 4, p. 580.)

B₂.—Is at *Harriman, Roane County, Tenn.*, on the northwest corner of Roane and Crescent streets, on the Denny Block, on the northeast corner of iron plate under iron column at the right hand of the open corner as one enters the corner door, 155 centimeters north of the southeast corner of the brick corner column, and 31 centimeters above the sidewalk, being the top surface inclosed with a square one inch on a side cut with a cold chisel.

C₂.—Is in *Harriman, Roane County, Tenn.*, on the foundation of the southeast bay window of the American University on the southeast corner of Walden and Roane streets, in the third course of masonry below the brick work, in the center of the second stone from the north end of the curve, 126 centimeters above the ground. (See note 1, p. 580.)

City.—Is in *Harriman, Roane County, Tenn.*, and was furnished by Mr. Griffith, City Engineer. It is the top surface at the outer angle of the stone supporting the southwest brick corner of the First National Bank building, about $2\frac{1}{2}$ inches above the sidewalk.

M.—Is at *Elverton, Roane County, Tenn.*, on the Southern Railroad right of way, about 50 feet north of the tracks and 100 feet northwest of the station, and 25 feet west of a lone cedar tree 5 inches in diameter. (See note 6, p. 580.)

N.—Is a copper bolt leaded into the first course of stone below the brick in the foundation of the Baptist church at *Wheat, Roane County, Tenn.*, on the south face of the church and near the southeast corner, about $4\frac{1}{2}$ inches from the edge and midway between the upper and lower surfaces of the stone. The center of the cross cut on the bolt is the bench mark.

Melton Δ .—Is on the land of Mr. George Lee, about one-fourth mile southeast of Martin Vann's house and about one mile north of *Williams Ferry* on the Clinch River. It is on the highest point in the ridge known as Copper Ridge, in *Roane County, Tenn.* It is most accessible on the west side from the road to the ferry, which passes within one-half mile of it, and through the small field of Mr. Vann's on the ridge between the road and Δ . A heavy limestone post $3\frac{1}{2}$ feet long, $1\frac{1}{2}$ feet wide, and 1 foot thick marks the station. The top is roughly dressed, rising 4 inches above the surface, and marked thus:

U	S
C	S

 The intersection of the grooves at the center of the top of the stone is the bench mark.

O.—Is at *Oliver Springs, Anderson County, Tenn.*, about 60 feet west of the station and in line between the first and second telegraph poles from the station, 7 feet from the first pole and 15 feet from the nearest rail of the siding. (See note 6, p. 580.)

P.—Is across the tracks from the station at *Dossett, Anderson County, Tenn.*, almost in line with the west side of the station and 12 paces from the nearest rail of the Southern Railway tracks. (See note 6, p. 580.)

Q.—Is at *Clinton, Anderson County, Tenn.*, on the Southern Railway bridge over the Clinch River, on the north bridge head on the east side, on top surface of a large stone supporting the trestle work, 5 inches from the south and 5 inches from the east edge of the stone. (See note 3, p. 580.)

R.—Is on the Southern Railway right of way at *Heiskell, Knox County, Tenn.*, 80 feet west of the station, 10 feet north of the nearest rail of the siding, and 6 feet southwest of the first telegraph pole west of the station. (See note 6, p. 580.)

S.—Is on the right of way of the Southern Railway at *Powell, Knox County, Tenn.*, about 200 feet west of the station, 12 feet south of the nearest rail of the siding, 15 feet west of the second telegraph pole west of the station, 15 feet east of the switch stand, and 40 feet east of the mail stand. (See note 6, p. 580.)

T.—Is on the right of way of the Southern Railway at *Black Oak, Knox County, Tenn.*, 5 rails west of the station sign, 20 feet south of the nearest rail of the main tracks, 8 feet north of a 7-inch oak tree, 10 feet northeast of a 10-inch oak tree. (See note 6, p. 580.)

933 M. C.—At *Knoxville, Tenn.* Established by the United States Geological Survey. Described later. See index.

867 M. C.—Near *Caswell, Knox County, Tenn.* Established by the United States Geological Survey. Described later. See index.

940 M. C.—Near *Wright, Knox County, Tenn.* Established by the United States Geological Survey. Described later. See index.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN HARRIMAN, TENN., AND WOODVILLE, ALA., 1900.

A₂.—Near *Harriman Junction*, on *Emory River*, *Morgan County, Tenn.* (See p. 630.)

B₂.—*Harriman, Roane County, Tenn.* (See p. 630.)

C₂.—*Harriman, Roane County, Tenn.* (See p. 630.)

D₂.—Is on the right of way of the Cincinnati, New Orleans and Texas Pacific Railroad, 550 meters north of *Emory Gap, Roane County, Tenn.*, just north of a switch leading to a coal mine siding, on the north abutment of a viaduct bridge 1.83 meters north of the southwest corner of the abutment and 6 inches north of the south face. (See note 4, p. 580.)

E₂.—Is 252 meters south of the station at *Cardiff, Roane County, Tenn.*, on the south side at the east end of a heavy stone cattle pass, 1.15 meters east of the east rail, 1.12 meters below the top of the rail and 5½ inches from either face of the heavy corner stone. (See note 4, p. 580.)

F₂.—Is in *Rockwood, Roane County, Tenn.*, on the Peterman Block, on the south side of Rockwood Avenue, in the stone base under the first window east of the large arched entrance, 0.158 meter west of the brick work and 0.117 meter back from the face of the stone. (See note 2, p. 580.)

G₂.—Is in *Rockwood, Roane County, Tenn.*, on the east face of the Mourfield Hotel, owned by J. A. Black, 3.93 meters north of the southeast corner of the main building, 1.08 meters above the ground, in the south end of a stone window sill, being a horizontal chisel mark in the end of a brass bolt leaded horizontally into the stone.

H₂.—Is in *Glen Alice, Roane County, Tenn.*, 205 meters north of the station of the Cincinnati, New Orleans and Texas Pacific Railroad, just east of the wagon road between the end of the heavy box culvert and the track, on the east end of the culvert, on the coping stone, 7 inches west of the east face and 1½ feet east of the west face. (See note 4, p. 580.)

I₂.—Is in *Roddy, Rhea County, Tenn.*, 509 meters south of the Cincinnati, New Orleans and Texas Pacific station, on the north abutment of bridge No. 107, on the east side, on the second stone north from the south face, 1.1 meters north of the south face and 4½ inches west of the east face of the stone. (See note 4, p. 580.)

J₂.—Is 550 meters north of the station platform of the Cincinnati, New Orleans and Texas Pacific Railroad at *Lorraine, Rhea County, Tenn.*, on the east end of the stone box culvert, 5.8 meters east and 2.9 meters below the east rail, on the coping stone, 0.55 meter north of the south face and 5 inches west of the east face. (See note 4, p. 580.)

K₂.—Is one-half mile north of *Spring City, Rhea County, Tenn.*, on the south abutment of the Cincinnati, New Orleans and Texas Pacific Railroad bridge over Little Piney Creek, 3.04 meters east and 2.9 meters below the top of the east rail, 1.12 meters above ground, and 4 meters west of the extreme eastern end of the abutment. (See note 1, p. 580.)

L₂.—Is 630 meters south of *Sheffield, Rhea County, Tenn.*, on Cincinnati, New Orleans and Texas Pacific Railroad, on a heavy arched culvert, on the west side of the north end, 5.65 meters west of and 2.8 meters below the west rail, on the third step

below the coping, 8 inches north of the south face and 6 inches east of the west face. (See note 4, p. 580.)

M₁.—Is 1 225 meters north of the Cincinnati, New Orleans and Texas Pacific station at *Evansville, Rhea County, Tenn.*, on the corner stone of the bridge seat course of bridge No. 119, on the west side, at the north end of the bridge, 2.7 meters west and 1.3 meters below the west rail, 8 inches east of the west face and 10 inches north of the south face of the stone. (See note 4, p. 580.)

N₁.—Is 1 330 meters south of *Evansville, Rhea County, Tenn.*, on the south abutment of the Cincinnati, New Orleans and Texas Pacific Railroad bridge over Little Richland Creek, at the east end, on the second step below the coping, 2.65 meters east and 1 meter below the east rail, 6 inches south of the north face and 5 inches west of the east face of the step. (See note 4, p. 580.)

O₁.—Is on the county court building in *Dayton, Rhea County, Tenn.*, on the south face of the water table, 0.42 meter east of the southwest corner and 1.15 meters above the ground. (See note 1, p. 580.)

P₁.—Is on the Dayton Bank and Trust Company building on the south side of Main street, in *Dayton, Rhea County, Tenn.*, at the northeast corner of the building, 1.18 meters above the sidewalk and 0.28 meter west of the northwest corner. (See note 1, p. 580.)

Q₁.—Is 1.4 miles north of *Graysville, Rhea County, Tenn.*, on the east side of the north end of a large arched culvert or viaduct of the Cincinnati, New Orleans and Texas Pacific Railroad, on the first step below the coping, 7 inches east of the east face of the coping, 4 inches north of the south face and 12 inches west of the east face of the step. (See note 4, p. 580.)

R₁.—Is about 0.7 mile south of *Graysville, Rhea County, Tenn.*, on the east end of the south abutment to bridge No. 125 of the Cincinnati, New Orleans and Texas Pacific Railroad over Roaring Creek, on the coping of the abutment which projects beyond the bridge seat blocks, 2.45 meters east of and 1.85 meters below the east rail, 4 inches west of the east face and 7 inches south of the north face of the stone. (See note 4, p. 580.)

S₁.—Is 275 meters north of the Cincinnati, New Orleans and Texas Pacific station platform at *Sale Creek, Hamilton County, Tenn.*, on the corner stone of the bridge seat course, on the west side at the north end of the railroad bridge over Rock Creek, 5 inches north of the south face and 8 inches east of the west face. (See note 2, p. 580.)

T₁.—Is 1 250 meters south of *Retro, Hamilton County, Tenn.*, on the south abutment of the Cincinnati, New Orleans and Texas Pacific Railroad bridge No. 131, over Opossum Creek, on the southwest corner of the coping, 2.4 meters west and 1.75 meters below the west rail, 8 inches east of the west face and 13 inches north of the south face of the stone. (See note 4, p. 580.)

U₁.—Is 205 meters north of the Cincinnati, New Orleans and Texas Pacific station at *Rathburn, Hamilton County, Tenn.*, on the north side of the south abutment of the railroad bridge over Little Soddy Creek, 1.2 meters west of and 2.5 meters below the west rail, on a bridge seat stone, 8 inches south of the north face and 6½ inches east of the west edge. (See note 4, p. 580.)

V₁.—Is 230 meters north of the station at *Daisy, Hamilton County, Tenn.*, on the north abutment at the east end of Cincinnati, New Orleans and Texas Pacific Railroad

bridge No. 135, on the corner stone of the bridge seat course, 2.5 meters east of and 1.11 meters below the east rail, $4\frac{1}{2}$ inches west of the east face and 10 inches north of the south face of the stone. (See note 4, p. 580.)

W₂.—Is 1.2 miles north of *Cave Springs, Hamilton County, Tenn.*, on the south side of the west end of a stone box culvert under the track of the Cincinnati, New Orleans and Texas Pacific Railroad, 3.35 meters west of and 1.32 meters below the west rail, on the first step below the coping, 4 inches east of the west face and 6 inches south of the north face. (See note 4, p. 580.)

X₂.—Is 1.4 miles south of *Cave Springs, Hamilton County, Tenn.*, on the south abutment of Cincinnati, New Orleans and Texas Pacific Railroad bridge No. 138 over North Chickamauga Creek, at the milepost marked "CIN 323," 2.8 meters west and 0.97 meter below the west rail on the corner stone of the coping, 5 inches east of the west face, 1.1 meters south of the north face and 0.65 meter north of the south face. (See note 4, p. 580.)

Y₂.—Is 187 meters south of the Cincinnati, New Orleans and Texas Pacific station at *Hixson, Hamilton County, Tenn.*, in the vertical face of a rock *in situ* about the center of a rock cut, 3.15 meters west of and 0.75 meter above the west rail. (See note 1, p. 580.)

Z₂.—Is between *Hixson and Boyce, Hamilton County, Tenn.*, on the west end of the north abutment of the Cincinnati, New Orleans and Texas Pacific Railroad bridge over Tennessee River, 2.25 meters west of and 1.17 meters below the west rail, on the northwest corner of the coping stone, 7 inches east of the west face and 7 inches south of the north face. (See note 2, p. 580.)

A₂.—Is between *Hixson and Boyce, Hamilton County, Tenn.*, on the south abutment of the Cincinnati, New Orleans and Texas Pacific Railroad bridge over the Tennessee River, on the southwest corner of the bridge seat stone, 2.2 meters west and 1.17 meters below the west rail, 8 inches north of the south face and 7 inches east of the west face of the stone. (See note 4, p. 580.)

B₂.—Is near *Chattanooga, Hamilton County, Tenn.*, to the eastward, at the crossing of the Knoxville branch of the Southern Railway over the Cincinnati, New Orleans and Texas Pacific Railroad, on the east retaining wall, in the center of a stone of the third course above the ground, 1.7 meters east of and 1 meter above the east rail of the Nashville, Chattanooga and St. Louis Railroad track, $11\frac{1}{2}$ inches south of the north edge of the stone and 10 inches north of the north end of the bridge seat stone. (See note 1, p. 580.)

698 N.—Is a bronze tablet marked "698 Nashville 1899," established by the United States Geological Survey on the United States Government building at *Chattanooga, Hamilton County, Tenn.*, on the lower course of stone at the southeast corner of the building, 3 feet north of the corner. (See note 24, p. 582.)

C₂.—Is in *Chattanooga, Hamilton County, Tenn.*, on the southwest corner of Broad and West Eighth streets, on the north wall of the foundation of the First National Bank building, in a large sandstone block in the third course above the sidewalk, being the third stone west of the basement entry. The bench mark consists of a horizontal chisel mark in the end of a brass bolt leaded horizontally into the stone 1.1 meters above the sidewalk and 0.85 meter east of the basement window.

Gauge.—Is a bench mark which has been established by the city engineer on the east end of the water table of the old First National Bank building at the southwest corner of Market and Sixth streets in *Chattanooga, Hamilton County, Tenn.*

D₃.—Is near *Chattanooga, Hamilton County, Tenn.*, on the south end at the east side of the Nashville, Chattanooga and St. Louis Railroad bridge over Chattanooga Creek, 0.85 meter east of and 1.75 meters below the east rail, on the bridge seat stone, 4 inches north of the south face and 8 inches west of the pier supporting the iron superstructure. (See note 4, p. 580.)

674 N.—Is a bronze tablet marked "674 Nashville 1899," established by the United States Geological Survey at *Wauhatchie, Hamilton County, Tenn.*, in the center of the foundation at the northeast side of a block signal tower. (See note 24, p. 582.)

E₃.—Is 80 meters west of the Nashville, Chattanooga and St. Louis station at *Hooker, Dade County, Ga.*, at the south end of an iron pipe drain under the track, 4.82 meters south of and 2.28 meters below the south rail, on the east end of a large base stone, 0.64 meter east of the center of the pipe and 4½ inches below the pipe. (See note 4, p. 580.)

974 N.—Is a bronze tablet marked "974 Nashville 1899," established by the United States Geological Survey 1.7 miles south of *Whiteside, Marion County, Tenn.*, at the west end of the face of a tunnel on the south side of the track, about 4 feet above the rail. (See note 24, p. 582.)

F₃.—Is 220 meters north of the Nashville, Chattanooga and St. Louis station at *Whiteside, Marion County, Tenn.*, on the north side at the west end of a culvert about 5.8 meters below the west rail, on the northwest corner of the coping stone, 10 inches from either face. (See note 4, p. 580.)

U. S.—Is in *Shellmound, Marion County, Tenn.*, 11 meters west of the station and 30 meters north from the north side of it, and 8 meters east of Mr. Hammond's store. It is a monument established by the United States Engineers, with its upper surface flush with the ground and marked "U X S," the exact point taken as the bench mark being the center of the circle of which the lower loop of the S is a segment.

639 N.—Is a bronze tablet marked "639 Nashville 1899," established by the United States Geological Survey 2.5 miles east of *Shellmound, Marion County, Tenn.*, in the top of the top step in the south wing of the east abutment of the railroad bridge over a highway. (See note 24, p. 582.)

G₃.—Is 560 meters west of *Shellmound, Marion County, Tenn.*, on the south end of the west abutment of the Nashville, Chattanooga and St. Louis Railroad bridge over the Nicojack Creek, 2.55 meters south of and 1.78 meters below the south rail, on the coping, 6 inches north of the south face and 10 inches east of the west face. (See note 2, p. 580.)

C.—Is near *Bridgeport, Jackson County, Ala.*, at the east end of the Nashville, Chattanooga and St. Louis Railroad bridge over the Tennessee River, on the south side of the abutment, on the large coping stone below the bridge seat block, 0.65 meter east of the west face, 0.165 meter north of the edge, and 1.49 meters below the south rail. (See note 4, p. 580.)

679 N.—Is a bronze tablet marked "679 Nashville 1899," established by the United States Geological Survey in front of the post-office in *Bridgeport, Jackson County, Ala.*, at the southwest corner, 4 feet above the sidewalk. (See note 24, p. 582.)

U. S. E.—Is at the east end of the east bridge over the Tennessee River at *Bridgeport, Jackson County, Ala.*, on the abutment on the south side, on the southwest corner of the coping, below the bridge seat block. It is not marked.

665 N.—Is a bronze tablet marked "665 Nashville 1899," established by the United States Geological Survey 1.7 miles east of *Carpenter, Jackson County, Ala.*, in the top of the capstone at the north end of the stone culvert. (See note 24, p. 582.)

D.—Is 446 meters east of the Nashville, Chattanooga and St. Louis station platform at *Bolivar, Jackson County, Ala.*, on the south end of the west abutment of the bridge over Widow Creek, 2.04 meters south of and 1.34 meters below the south rail, in the large bridge seat block, 0.15 meter north of its south face and 0.25 meter east of its west face. (See note 4, p. 580.)

625 N.—Is a bronze tablet marked "625 Nashville 1899," established by the United States Geological Survey, 0.8 mile west of *Bolivar, Jackson County, Ala.*, at the west end of the face of the capstone at the north end of a stone culvert.

627 N.—Is a bronze tablet marked "627 Nashville 1899," established by the United States Geological Survey, 840 feet north of the station at *Stevenson, Jackson County, Ala.*, at the top of the southeast corner of the capstone at the east end of a stone culvert.

E.—Is 1 mile west of *Stevenson, Jackson County, Ala.*, on the south wall of the west abutment of the Southern Railway bridge over Crow Creek, in a large stone just below the coping, 1.7 meters above the ground and 0.64 meter below the top of the pier, and 15 inches west of the east face. (See note 1, p. 580.)

F.—Is 225 meters west of the *Cedar Grove* siding of the Southern Railway, in *Jackson County, Ala.*, on the second step of the retaining wall on the east side, at the south end of bridge No. 282.9 A, 1.5 meters south and 1.1 meters below the south (?) rail, 8 inches east of the west face, 13 inches north of the south face of the second step and 7 inches south of the first step. (See note 4, p. 580.)

G.—Is 0.7 mile west of *Fackler, Jackson County, Ala.*, on the east end at the north side of the Southern Railway bridge No. 287.1 A, over Pole Branch, on the second step of the east retaining wall, 2.45 meters north of and 1.54 meters below the north rail, 7 inches south of the north face and 11 inches east of the west face of the step. (See note 4, p. 580.)

H.—Is $1\frac{3}{4}$ miles west of *Fackler, Jackson County, Ala.*, on the south side of the east end of the east abutment of the Southern Railway bridge over Mud Creek, 1.45 meters south and 1.4 meters below the south rail, on the coping under the bridge seat block, 4 inches from the south face and 0.45 meter east of the west face. (See note 4, p. 580.)

I.—Is in *Hollywood, Jackson County, Ala.*, north of the railway station, 85 meters north of the track, in the east face of G. W. Chapman's Hotel, in the seventh course of stonework below the top of the foundation of the brick chimney, 1.18 meters above the ground, $8\frac{3}{4}$ inches south of the end of the stone and the corner of the chimney. (See note 1, p. 580.)

J.—Is 3 miles west of *Hollywood, Jackson County, Ala.*, on the Southern Railway, on the north side, at the east end of bridge No. 295.2 A, 2.1 meters north of and 1.28 meters below the north rail, on the second step of the retaining wall, 8 inches east of the west face and 5 inches south of the north face. (See note 4, p. 580.)

K.—Is in *Scottsboro, Jackson County, Ala.*, 350 meters south of the Southern Railway station, in the west wall of the court-house, 10 feet north of the southwest corner, midway between the first and second windows, in the water table of the chimney offset, 2.25 feet above the ground. (See note 1, p. 580.)

L.—Is 1.3 miles east of *Larkinsville, Jackson County, Ala.*, on a rock *in situ* at the east end of a deep stone cut of the Southern Railway, 25 meters west of a road crossing, 0.35 meter above and 2.23 meters north of the north rail. (See note 1, p. 580.)

M.—Is one-half mile west of *Larkinsville, Jackson County, Ala.*, on the west side at the south end of Southern Railway bridge No. 303.6 A, 2.45 meters south of and 1.36 meters below the south rail, on the second step below the coping of the retaining wall, 0.2 meter west of the east face and 0.15 meter north of the south face. (See note 4, p. 580.)

N.—Is at *Lim Rock, Jackson County, Ala.*, 213 meters west of the Southern Railway station, on the south end of the east abutment to a bridge or cattle guard at the west end of village, at the right of way fence, 1.15 meters south of and 0.75 meter below the south rail, on the end stone of the coping, 6 inches north of the south face and 7 inches east of the west face. (See note 4, p. 580.)

O.—Is 1.8 miles west of *Lim Rock, Jackson County, Ala.*, in the north wall of a deep stone cut of the Southern Railway, about one-quarter of the length of the cut from the eastern end, 166 meters west of a road crossing, 2.55 meters north of and 0.76 meter above the north rail. (See note 1, p. 580.)

J₃.—At *Woodville, Jackson County, Ala.* (See p. 638.)

K₂.—At *Woodville, Jackson County, Ala.* (See p. 638.)

P.—Is at *Dossett* about 2 miles from *Swearengin, Marshall County, Ala.*, in T. 5 S., R. 4 E., on the line of the Woodville and Guntersville highway, at the foot of Gunter Mountain, on the north side, at the point where the road leaves Wrights Cove Creek and ascends the mountain, 46 meters southward from the creek and 23 meters eastward from the road, on a high and prominent point of a large sheet of rock. (See note 2, p. 580.)

Q.—Is in *Swearengin, Marshall County, Ala.*, T. 5 S., R. 4 E., on the north side of Mr. W. B. Huggins's residence on the Woodville and Guntersville road, 500 feet north of the main road crossing, 26 feet west of the center of the road, in a stone chimney, 6½ inches west of the northeast corner and 32 inches above the ground. (See note 1, p. 580.)

Gunter Δ.—Is near *Swearengin* in *Marshall County, Ala.*, T. 5 S., R. 4 E., on the top of a gently rounded hill known as Gunter Mountain, covered with a dense growth of brush and small timber. It is on the land of Mrs. L. Gideon, 1.2 miles N. 75° E. from the main road crossing at *Swearengin*, one-quarter mile N. 85° E. from *Prospect Church*, and 350 feet S. 70° E. from a point on the *Carlile* and *Henderson* road to *Saltpeter Cave*, or *Lim Rock*, 1 170 feet east from its junction with the *Scottsboro* road, said junction being 4 800 feet N. 70° E. from the road crossing at *Swearengin*. The bench mark is the bottom of a square cut in the southwest quarter of the cross on the top of the stone lettered U. S. C. S. marking the triangulation point Gunter.

Gunter N.—Is the bottom of a square cut in the southwest quarter of the cross on a reference stone 6 feet north of the stone marking the triangulation station Gunter described above.

Gunter S.—Is the bottom of a square cut in the southwest quarter of the cross on a reference stone 6 feet south of the stone marking the triangulation station Gunter described above.

Gunter E.—Is the bottom of a square cut in the southwest quarter of the cross on a reference stone 6 feet east of the stone marking the triangulation station Gunter described above.

Gunter W.—Is the bottom of a square cut in the southwest quarter of the cross on a reference stone 6 feet west of the stone marking the triangulation station Gunter described above.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN WOODVILLE AND
BIRMINGHAM, ALA.

J₂.—Is at *Woodville, Jackson County, Ala.*, on the right of way of the Southern Railway, opposite the station house and in line with the west side of the platform, 8 paces south of the south rail of the main track. Sub-bench mark is on the north side of the post, 0.2952 meter below the surface bench mark. (See note 9, p. 581.)

K₂.—Is at *Woodville, Jackson County, Ala.*, about 500 feet west of the depot, on the north side of the west bridge seat of a small trestle, being a copper bolt in the projecting end of the first rock of the second course of masonry from the top, and at the north end, about 5 inches from the north and 8 inches from the east edge of the stone. (See note 10, p. 581, except no cross lines are noted.)

L₂.—Is about 1 mile west of *Woodville, Jackson County, Ala.*, near the center of a big fill, 25 feet below the surface of the grade, on an arched stone waterway, 9 telegraph poles west of mile pole No. 314A, being a copper bolt sunk in the surface of the west stone on the north side of the waterway, 1 foot from the north side and 9 inches from the east side of the stone. (See note 10, p. 581, except no cross lines are noted.)

T. B. M. 1.—Is about 2 miles west of *Woodville, Jackson County, Ala.*, on the north side of the east bridge head of trestle No. 315.3A over Paint Rock River, 5 inches from the east and south edges of stone supporting the steel frame work of the trestle. (See note 5, p. 580.)

M₂.—Is at *Paint Rock, Jackson County, Ala.*, on the west abutment of trestle No. 318.1A, west of the station, being a copper bolt in the top rock at the north end of the masonry, 6 inches from the north and east edges. (See note 16, p. 581.)

N₂.—Is at *Gurley, Madison County, Ala.*, about 275 feet west of the station, 7 paces south of the south rail of the main track of the Southern Railway, and across the tracks from the third telegraph pole west of the station, 30 paces east of the switch stand to the siding. Sub-bench mark is on the east side of post, 0.2778 meter below the surface bench mark. (See note 9, p. 581.)

T. B. M. 8.—Is about 2 miles west of *Gurley, Madison County, Ala.*, on the south side of the east abutment of trestle No. 324.0A, 4½ inches from the south and 5 inches from the west edge of the large stone at the south end. (See note 5, p. 580.)

O₂.—Is at *Brownsboro, Madison County, Ala.*, on the right of way of the Southern Railway, about 30 feet west of and across the tracts from the station house, 5 paces from the north rail, and 5 feet east of the first telegraph pole west of the station. Sub-bench mark is in the south side of post, 0.2845 meter below the surface bench mark. (See note 9, p. 581.)

T. B. M. 12.—Is one-half mile west of *Brownsboro, Madison County, Ala.*, on the south side of the east abutment to trestle No. 328.1 over Flint River, 18 inches south of the south rail and 5 inches from the south and west edges of a large stone just beneath the rails. (See note 5, p. 580.)

P₂.—Is in a long cut 0.4 mile west of *Fearns, Madison County, Ala.*, near the center of the top surface of a large rock *in situ* between the railroad track and milepost 335A and is 1.7 meters from the milepost, about 8 feet above level of the railroad grade. (See note 7, p. 581.)

City.—Is at *Huntsville, Ala.*, on the doorsill of the corner entrance to the city hall, corner of Clinton and Washington streets, and is the center of a horseshoe mark.

Q₂.—Is at *Huntsville, Madison County, Ala.*, on the city hall, near the center of the third stone from the easternmost of the four large doors on the Clinton street side of the building, in the fourth course from the sidewalk. (See note 8, p. 581.)

R₂.—Is about 3 miles east of *Madison, Madison County, Ala.*, on the south side of the west abutment to trestle No. 345.7A, 4 inches from south and west edges. (See note 7, p. 581.)

S₂.—Is near the court-house at *Madison, Madison County, Ala.*, just inside the railway right of way, 75 feet west of the station and across the tracks therefrom; 30 feet from the south rail of the main track, and 6 feet north of a small tree on the boundary of the right of way. Sub-bench mark is in the north side of the post, 0.2980 meter below the surface bench mark. (See note 9, p. 581.)

T₂.—Is about 1 mile east of *Greenbrier, Limestone County, Ala.*, in the east abutment to the trestle at mile pole 353A, on the northeast one of the four caps to the abutments, in the second stone from the top, 8 inches from the southeast corner, at the edge formed by the curved surface of the cap. (See note 7, p. 581.)

T. B. M. 38.—Is a half mile east of *Belle Mina, Limestone County, Ala.*, on the south side of the east abutment of trestle No. 355.8A over Limestone Creek, 7 inches from the outer corner. (See note 5, p. 580.)

U₂.—Is at *Belle Mina, Limestone County, Ala.*, on the Southern Railway right of way, 50 feet west of the station and 7 paces south of the south rail of the main track. (See note 6, p. 580.)

T. B. M. 39.—About 1 mile west of *Belle Mina, Limestone County, Ala.*, on the north side of the east pier of trestle No. 357.3A, 5 inches from the north and east edges of the pier. (See note 5, p. 580.)

P. B. M. 50.—*Decatur, Ala.* (See App. 8, Report for 1899, p. 707.)

U. S.—*Decatur, Ala.* (See App. 8, Report for 1899, p. 707.)

P. B. M. 51.—*Decatur, Ala.* (See App. 8, Report for 1899, p. 707.)

P. B. M. 52.—*Decatur, Ala.* (See App. 8, Report for 1899, p. 707.)

V₂.—Is about 1½ miles south of *Flint, Morgan County, Ala.*, on the west side of the north abutment of trestle No. 4, being a copper bolt, sunk in the top surface of the third stone from the south end, 5 inches from the north edge of the stone. (See note 10, p. 581.)

W₂.—Is one-fourth mile south of *Hartsells, Morgan County, Ala.*, in the west side of an arched stone culvert, being a copper bolt, 5 inches from the west edge of the third stone from the south end. (See note 10, p. 581.)

T. B. M. 60.—Is about 3 miles south of *Hartsells, Morgan County, Ala.*, and three-fourths mile north of *Leesdale, Morgan County, Ala.*, on the north abutment of trestle No. 10, on the northeast corner of the east stone supporting the trestlework. (See note 5, p. 580.)

X₂.—Is a mile south of *Falkville, Morgan County, Ala.*, 3 paces south of milepost

$$\begin{array}{ccc} D & & M Y \\ 20 & \square & 163 \\ & \text{---} & \\ & 137 & \end{array}$$

and 12 feet west of the west rail of the main track of the Louisville and Nashville Railway, being a square cut on the top surface of a rock *in situ*. (See note 3, p. 580.)

Y₂.—Is 1½ miles south of *Wilhite, Cullman County, Ala.*, in the west bridge seat stone of the south abutment of trestle No. 19, being a copper bolt, 3½ inches from the north edge and 2½ inches from the west edge of the stone. (See note 7, p. 581.)

Z₂.—Is 3½ miles north of *Cullman, Cullman County, Ala.*, about 20 rails south of milepost 30 (from Decatur), along the Louisville and Nashville Railway, in the top surface of the north stone of the east side of a culvert, being a copper bolt, 4½ inches from the east edge and 30 inches from the north edge of the stone. (See note 7, p. 581.)

A₃.—Is at *Cullman, Cullman County, Ala.*, in a stone block supporting the northeastern one of the four inner columns of the railway water tank, 2½ inches from the north and 4 inches from the east edge of the stone. (See note 7, p. 581.)

B₃.—Is about 200 yards north of the railroad sign at *Johnson, Cullman County, Ala.*, 4 rails south of milepost 40 (from Decatur), along the line of the Louisville and Nashville Railway, on the east side of the south abutment to trestle No. 33, being a copper bolt sunk in the top surface of the second course of the masonry from the top, 6 inches from the east and the north edges of the stone. (See note 7, p. 581.)

C₃.—Is about 3 miles south of *Hanceville, Blount County, Ala.*, one-fourth mile south of milepost 44 (from Decatur), on the west side of a stone culvert, being a copper bolt in second stone from north end, 4 inches from the west edge and 7 inches from the north edge of the stone. (See note 7, p. 581.)

D₃.—Is 1 mile south of *Garden City, Blount County, Ala.*, on the mid-river pier of trestle No. 36 over Mulberry Branch of Black Warrior River, in a Δ -shaped stone, on the top of the east side of the pier, being a copper bolt 6 inches from each side and 8 inches from the outer point of the stone. (See note 7, p. 581.)

E₃.—Is about three-fourths of a mile north of *Blount Springs, Blount County, Ala.*, in the top stone on the east side of the north abutment to bridge No. 38, being a copper bolt 13 inches from the east edge and 16 inches from the north edge of the stone. (See note 7, p. 581.)

F₃.—Is about three-fourths of a mile south of *Blount Springs, Blount County, Ala.*, on the east side of the south bridge-seat stone of trestle No. 41, being a copper bolt in the top surface of a large stone, 6 inches from the east and 8 inches from the north side of the stone. (See note 7, p. 581.)

G₃.—Is about 200 yards south of *Reids, Blount County, Ala.*, and 100 feet south of milepost 58 (from Decatur), on the west side of the south part of an arched stone culvert, being a copper bolt on the first stone of the downstream revetment to the culvert, below

the top course of masonry, 3 inches from the west and $3\frac{1}{2}$ inches from the north edge of the stone. (See note 7, p. 581.)

H₂.—Is just within the right of way of the Louisville and Nashville Railway, at *Warrior, Jefferson County, Ala.*, on a stone post 15 paces west of the siding, and 75 feet north of the station house, and across the tracks therefrom, 4 feet from the boundary fence, and 4 paces south of a 14-inch oak and back of the tool house of railroad company. (See note 6, p. 580.)

I₂.—Is about 2 miles south of *Warrior, Jefferson County, Ala.*, on the long trestle No. 45, over Locust Branch of Black Warrior River, in a stone under the bridge seat stone, on the east side of the south abutment, being a copper bolt 6 inches from the east and 8 inches from the north edge of the stone. (See note 7, p. 581.)

J₂.—Is at *Morris, Jefferson County, Ala.*, on a stone post, 20 paces west of the siding and 60 feet north of the station house, $2\frac{1}{2}$ feet from the fence running east and west, and 7 paces west from the corner of the fence at the intersection of the railroad right of way line and the county road. (See note 6, p. 580.)

T. B. M. 107.—Is about 2 miles north of *Cunningham, Jefferson County, Ala.*, on the east side of the south abutment of trestle No. 50, on the bridge seat stone, 2 inches from the east and 8 inches from the south edge of the stone. (See note 5, p. 580.)

K₂.—Is at *Newcastle, Jefferson County, Ala.*, on a stone post 30 paces east of the main track of the Louisville and Nashville Railway, 15 paces south of the station house, about on a level with the railroad grade, but on the side of a hill near a small group of trees. (See note 6, p. 580.)

L₂.—Is at *Boyles, Jefferson County, Ala.*, on a stone post, 30 paces south of the station, 25 paces west of the tracks, and 4 paces north of a large 14-inch tree. (See note 6, p. 580.)

P. B. M. 2.—At *Birmingham, Ala.* (See App. 8, Report for 1899, p. 709.)

P. B. M. 3.—At *Birmingham, Ala.* (See App. 8, Report for 1899, p. 709.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN DECATUR, ALA., AND CORINTH, MISS.

P. B. M. 51.—Is at *Decatur, Ala.* (See p. 707, App. 8, Report for 1899.)

P. B. M. 50.—Is at *Decatur, Ala.* (See p. 707, App. 8, Report for 1899.)

Old R. R. B. M.—Is at *Decatur, Ala.* (See p. 707, App. 8, Report for 1899.)

M₂.—Is at *Decatur, Morgan County, Ala.*, 500 feet west of the Southern Railway bridge across the Tennessee River, on the railroad and highway bridge across the Southern Railway tracks on Market street, on the west side of the north abutment, on the second stone from the ground, 9 inches from the west and south edges of the stone. (See note 3, p. 580.)

N₂.—Is at *Decatur, Morgan County, Ala.*, on the First National Bank Building, at the corner of Bank and Pond streets, on the pedestal stone supporting the east column of the portico, on the southeast side of the column and the corner toward both streets. (See note 3, p. 580.)

O₂.—Is at *Decatur, Morgan County, Ala.*, on the portico of the south entrance to the county court-house, at the east end of the portico, 9 or 10 feet east of the center of the entrance, on the stone sill, 7 inches from the main wall, and on the middle line of the stone. (See note 3, p. 580.)

P₈.—Is at *Trinity, Morgan County, Ala.*, on the stone foundation of the water tank, about 25 feet east of the center of the main track, on the stone projecting from under the northeast corner of the tank. (See note 3, p. 580.)

Q₈.—Is at *Hillsboro, Lawrence County, Ala.*, on the two-story brick store building known as the Robinson Block, south of and across the street from the Southern Railway depot; on the front sill, $3\frac{1}{2}$ feet from the northwest corner of the building, 8 inches east of the jamb at the northwest corner, and 8 inches from the front edge of the sill. (See note 3, p. 580.)

R₈.—Is at *Hillsboro, Lawrence County, Ala.*, on the front of the first two-story brick store building west of the brick building known as the Robinson Block, separated from it at present by a shed 15 feet wide; 12 inches from the northwest corner and about 4 feet from the ground, in the center of the eleventh brick above the iron doorsill. (See note 13, p. 581.)

S₈.—Is at *Courtland, Lawrence County, Ala.*, on the front of the two-story brick building owned and occupied by the Merchant's Bank of Courtland, on the east side of the square, and adjoining the right of way of the Southern Railway, in the fifteenth brick above the iron doorsill and two brick lengths north of the southwest corner. (See note 13, p. 581.)

T₈.—Is at *Courtland, Lawrence County, Ala.*, at the northeast corner of the "Square," in the stone horse block, a hard limestone rock with two steps cut in the east side, rising above the ground 3 feet and said to extend 3 feet below the surface of the ground and to have been set about seventy-five years ago; in the south side, 12 inches below the top and 7 inches from the west edge. (See note 13, p. 581.)

U₈.—Is a half mile west of *Courtland, Lawrence County, Ala.*, on the right of way of the Southern Railway, on a hard limestone rock *in situ* on the west bank of Big Nance Creek 27 feet south of the center of the railway track on a line drawn perpendicular to the track at a point about 3 feet east of the west abutment of the trestle (No. 383.5). A large boulder is between the bench mark and the creek, separated from the rock on which the mark was placed by a fissure about 8 inches wide. A sycamore tree about 2 feet in diameter with old blaze on the north side is about 14 feet south and a cedar tree 8 inches in diameter is 10 feet west of the bench mark. (See note 3, p. 580.)

V₈.—Is 3 miles west of *Town Creek, Lawrence County, Ala.*, on the north end of the east abutment of the iron bridge of the Southern Railway across Town Creek, on the top of the abutment, 8 inches from the shore face and 10 inches from the downstream end, 11 inches diagonally from the bridge seat. (See note 3, p. 580.)

W₈.—Is at *Leighton, Colbert County, Ala.*, in the brick wall of the store building known as the King Building and now occupied by King & Co., 16 inches from the northwest corner, in the seventeenth brick from the brick sidewalk. (See note 13, p. 581.)

X₈.—Is 4 miles east of *Tuscumbia, Colbert County, Ala.*, on the right of way of the Southern Railway, 33 feet north of the track, 2 feet from the railway fence, about 300 yards west of the west switch stand at the Hobgood siding of the Southern Railway, in the top of a stone post 5 feet long, with 1 foot projecting, octagonal in shape, and about 8 inches in diameter. (See note 3, p. 580.)

P. B. M. 9.—Is at *Tuscumbia, Ala.* (See p. 702, App. 8, Report for 1899.)

T. B. M. 80.—Is at *Tuscumbia, Ala.* (See p. 701, App. 8, Report for 1899.)

P. B. M. 8.—Is at *Tuscumbia, Ala.* (See p. 701, App. 8, Report for 1899.)

T. B. M. 71.—Is near *Prides, Ala.* (See p. 701, App. 8, Report for 1899.)

T. B. M. 68.—Is near *Prides, Ala.* (See p. 701, App. 8, Report for 1899.)

T. B. M. 72.—Is at *Prides, Ala.* (See p. 701, App. 8, Report for 1899.)

T. B. M. 73.—Is at *Prides, Ala.* (See p. 701, App. 8, Report for 1899.)

P. B. M. 7.—Is at *Prides, Ala.* (See p. 701, App. 8, Report for 1899.)

T. B. M. 63.—Is near *Prides, Ala.* (See p. 701, App. 8, Report for 1899.)

Y₃.—Is in *Colbert County, Ala.*, 2.7 miles west of *Prides, Ala.*, 48 feet north of the center of the Southern Railway track, on a line drawn perpendicular to the track at a point about 9 feet east of trestle No. 416.4A (from Bristol) on a large hard limestone rock *in situ*, about 4 by 9 feet and rising about 10 inches above the ground at its highest part, the southeast one of a number of similar rocks, 3 feet from the south edge and 16 inches from the west edge of the rock. (See note 3, p. 580.)

T. B. M. 58.—Is near *Barton, Ala.* (See p. 701, App. 8, Report for 1899.)

Z₃.—Is 2654 feet west of *Cherokee, Colbert County, Ala.*, in a deep cut, 10 feet north of the center of the track, on the face of the stratum of sandstone, 2 feet above the top of the rails. (See note 13, p. 581.)

A₄.—Is $1\frac{1}{4}$ miles east of *Margerum, Colbert County, Ala.*, on the west abutment of the Southern Railway deck plate girder of bridge No. 426.8A (from Bristol), over Buzzard Roost Creek, on the lowest step of the retaining wall, 13 feet north of the center of the track, $5\frac{1}{2}$ feet below the top of the ties and 2 feet above the top of the abutment proper, 12 inches from the north edge of the stone and 11 inches from the east edge. (See note 3, p. 580.)

T. B. M. 45.—Is at *Margerum, Ala.* (See p. 701, App. 8, Report for 1899.)

B₄.—Is $1\frac{1}{4}$ miles west of *Riverton Junction, Colbert County, Ala.*, on the south end of the west abutment of the bridge over Big Bear Creek, on the coping stone, 8 inches and 30 inches from the south and west edges, respectively, 1 foot below the top of the pedestal stone, about 3 inches below the top of the ties, and about 10 feet from the center of the track. (See note 3, p. 580.)

T. B. M. 41.—Is near *Pegram, Ala.* (See p. 700, App. 8, Report for 1899.)

C₄.—Is about 2 miles west of *Riverton Junction, Colbert County, Ala.*, on the stone post marking the State line between *Alabama* and *Mississippi*, 15 feet north of the center of the track. The post rises above the ground about 4 feet and leans slightly to the westward, but appears to be set firmly in the ground. The bench mark is the intersection of the two lines cut on side of the post toward the railway track. Marked

$$\frac{S}{M} \bigg| \frac{L}{A}$$

P. B. M. 3.—Is at *Iuka, Miss.* (See p. 700, App. 8, Report for 1899.)

P. B. M. 1.—Is at *Burnsville, Miss.* (See p. 700, App. 8, Report for 1899.)

A₃.—Is 9 miles west of *Burnsville, Tishomingo County, Miss.*, 607 feet east of mile post 453A (from Bristol), on the north end of a stone culvert, on the west coping stone, 8 inches from the north edge and 16 inches from the west edge. (See note 3, p. 580.)

B₃.—Is $4\frac{1}{4}$ miles east of *Corinth, Alcorn County, Miss.*, 2,900 feet east of mile post 455A (from Bristol), on the south end of a stone arch culvert, on the east coping stone, 12 inches and 10 inches from the south and east edges, respectively. (See note 3, p. 580.)

V.—Is at *Corinth, Miss.* (See p. 596, App. 8, Report for 1899.)

T. B. M. 1.—Is at *Corinth, Miss.* (See p. 700, App. 8, Report for 1899.)

W.—Is at *Corinth, Miss.* (See p. 596, App. 8, Report for 1899.)

C₂.—Is at *Corinth, Alcorn County, Miss.*, on a store building occupied by J. C. Small, hardware merchant, on the southwest corner of Franklin and Cruse streets, one block west and two blocks south of the court-house, on the stone sill under the show window on the east side of the store, 12 feet south of the northeast corner and 8 inches above the pavement. (See note 3, p. 580.)

DESCRIPTION OF PERMANENT BENCH MARKS BETWEEN GIBRALTAR AND LEXINGTON,
MICH., AND AT AMHERSTBURG, ONT.

[From information furnished by the U. S. Lake Survey. For descriptions of the other bench marks on this line, see App. 8, Coast and Geodetic Survey Report for 1899, pp. 843-847.]

Gauge B. M.—*Amherstburg, Ontario, Canada.* Top of a ship spike driven into the top of a maple stump 1 foot in diameter and about one-half foot above the ground. The stump is about 30 feet from the water's edge and about 100 feet north from a point abreast of the gauge house.

P. B. M. No. 6.—Is in *Ecorse, Mich.*, opposite the head of Fighting Island, at the Tecumseh Salt Works, 136 feet east of the northeast corner of boiler room, on the river front, at the end of railroad track, 11 feet west of the bumper and 4½ feet north of north rail, on top of pile 10 inches in diameter and 14 inches above ground; being top of 20-penny wire spike driven to surface and circumscribed by a 2-inch square cut into the wood with a cold chisel.

U. S. B. M. Detroit 1871.—Is in *Detroit, Mich.*, on the foundation of Lighthouse depot, at foot of Mount Elliott avenue, 8.2 feet below the outer edge of the water table, on the west jam of south door; being center of cross cut in the stone.

P. B. M. Lakeport.—Is in *Lakeport, Mich.* It is the top of a brass bolt leaded vertically in the top of a granite stone 14 by 14 by 8 inches, buried 2½ feet underground in the southeast corner of lot No. 2, block 2. It is in the southeast corner of hotel yard owned by Mr. John Thoday, 20 inches north of fence on north side of Milwaukee street and 14 inches west of fence on west side of Second street. A granite stone 6 by 6 inches extends 4 inches above the ground and is directly over P. B. M.

P. B. M. Lexington 3.—Is in *Lexington, Mich.* It is the summit of a brass bolt leaded vertically in the north end of stone sill of the north door of city hall. Bolt is 3 inches south of north end of sill and 1½ inches back of front edge. It is about 10 feet south of the northwest corner of building. Building is a three-story brick and fronts on Main street between Huron avenue and Simons street. Ground floor used for hose house, second floor for council room, and third floor for Masonic hall.

P. B. M. Lexington 1.—Is in *Lexington, Mich.*, center of a period between the letters M. and E. in the center of the cornerstone of the Methodist Episcopal Church at Lexington, Mich. Church stands on the northeast corner of Main and Lake streets, and was rebuilt in 1890. Mark is about 3 feet above ground, 9 inches north of the southwest corner. Cornerstone marked

F I R S T
M. E.
C H U R C H,
1851-1890.

P. B. M. Lexington 2.—Is in *Lexington, Mich.* It is the summit of a small square cut on top of water table on west side of a 2-story brick building, owned by John L. Fead, at the northeast corner of Main and Boynton streets. Mark is 25 inches north of southwest corner of building and 3 inches back from front of water table.

P. B. M. Lexington 4.—Is in *Lexington, Mich.* It is the summit of a brass bolt leaded vertically in the top of a large granite boulder which is in the front yard of Mrs. Martha Henry's property. It is 22 meters north of the north end of Dallas street and the north side of Simons street. (Foot of street is at dock.) It is about 40 meters back from high bank of lake and about 125 meters south of the Lexington Woolen Mills.

DESCRIPTIONS OF BENCH MARKS FROM DETOUR TO IROQUOIS POINT, MICH., CONNECTED WITH OR ESTABLISHED BY PRECISE LEVELS OF UNITED STATES LAKE SURVEY IN 1901.

(From information furnished by U. S. Lake Survey.)

P. B. M. Goetz.—*Detour, Mich.* Top of a brass bolt leaded vertically in the top of a granite boulder near the center of the foot of St. Marys street, about 35 meters from the water's edge of St. Marys River and projecting about 5 inches above the ground. The boulder is 7 meters south and $1\frac{1}{2}$ meters east of the corner of the sidewalk, one block north of Anthony's dock, 70 meters east and 8 meters south of the southwest corner of Hotel Detour, owned by J. F. Goetz.

P. B. M. Detour 2.—*Detour, Mich.* Top of an iron bolt $1\frac{1}{4}$ by $1\frac{1}{4}$ inches square cemented in the top of a granite boulder, the top of which is about flush with the ground, 85 meters east and 20 meters south of the Huron House, 55 meters south of Bennett's store and post office, 17 meters from water's edge of St. Marys River, 24 meters northeast of the northeast corner of J. T. Bennett's yard, near Anthony's coal dock.

P. B. M. Terrett.—*Detour, Mich.* Top of a brass bolt leaded vertically in top of a large limestone boulder which lies at the junction of Superior and Huron streets, about 2 meters west of the east line of Superior street and at a point where Superior street angles to the west. It is 8 meters northwest of a large granite boulder, $17\frac{1}{2}$ meters east of a fence corner, which is the southeast corner of a block, also southeast corner of Mr. Richard Terrett's yard; $26\frac{1}{2}$ meters southeast of the northeast corner of Mr. Terrett's house, 22 meters northeast of a log house, 80 meters northwest from the water's edge of St. Marys River and 1 block (130 meters) south of P. B. M. Detour 1. Marked

U S
P B M

P. B. M. Detour 1.—*Detour, Mich.* Top of a $\frac{1}{2}$ -inch iron bolt leaded vertically in the top of a cut stone 6 by 6 by 20 inches and buried $2\frac{1}{2}$ feet below the surface of the ground, at the intersection of Superior and Drummond streets. It is 4 meters north and 3 meters east of a fence corner at the southeast corner of street intersection. A cedar post 6 inches in diameter and 4 by 4 inches at the top is planted over the bench for a surface mark and projects about 3 feet above ground. Letters U. S. B. M. are cut on opposite sides of the post. Established 1895.

P. B. M. Detour 3.—*Detour, Mich.* Intersection of a cross cut on top of iron plate about 6 inches northwest of northwest corner post of Detour Lighthouse. Marked U. S. + B. M. Established 1895.

P. B. M. Detour 4.—*Detour, Mich.* Top of a brass bolt leaded vertically in the summit of a very large limestone boulder which lies 5 meters north and $1\frac{1}{2}$ meters east of the northwest corner of the tower of Detour Lighthouse. The stone is marked thus:

$$\begin{array}{c} S \quad \Omega \\ + \\ P \quad B \quad M \end{array}$$

the bolt being on the western point of the cross which is an old T. B. M.

P. B. M. Detour 5.—*Detour, Mich.* Top of a brass bolt leaded vertically in the top of a large limestone boulder which lies 11 meters northwest of the northwest corner of the light keeper's dwelling. The boulder is well embedded and projects about one-half meter above the ground. The bolt projects about one-fourth inch above the boulder. Marked U. S.

P. B. M. Boat House.—*Detour, Mich.* Top of a brass bolt leaded vertically in the top of a limestone boulder 1 by $1\frac{1}{2}$ meters, and projecting about 0.3 meter above the ground. Boulder is well embedded and lies on gravel beach on the east shore of the bay and on the west side of Detour Point. It is 65 meters north of boathouse belonging to Detour Lighthouse, 74 meters northeast of outer end of pier at boathouse, 3 meters east of water's edge, 7 meters west of edge of brush and 300 meters from Detour Lighthouse. Bolt is about 6 inches from north edge of boulder. Marked U. S.

P. B. M. Caribou.—Four and one-half miles west of *Detour, Mich.* Top of an iron bolt leaded in the top of a cut stone, 6 by 6 by 20 inches, buried in sand with its top end $2\frac{1}{2}$ feet below the surface. A 6-inch cedar post, 4 by 4 inches at the top and marked U. S. B. M. on opposite sides, is planted over the stone for a surface mark. The stone is 364 meters east of the point where the wagon road leaves the water's edge of Caribou Lake, $2\frac{1}{2}$ meters north of the center of the wagon road and 50 meters south of Caribou Lake. Established 1895.

P. B. M. Schlessner.—One mile west and 1 mile north of *Schlessner, Mich.* Top of a $\frac{3}{8}$ -inch iron bolt leaded vertically in the top of a cut stone, 6 by 6 by 20 inches, and buried with its top $2\frac{1}{2}$ feet below the surface of the ground. The bolt projects one-fourth inch above the surface of the stone between the letters U. S. A stone 6 by 8 by 14 inches is planted in a vertical position over the mark and projects $2\frac{1}{4}$ inches above the ground. The stone is at Rusk's corner, 1 mile north of Cameron's corner, in the center of the road leading west, near the west fence line of the north and south road, $57\frac{1}{2}$ meters northeast of the northeast corner of the school house, 190 meters east of the creek crossing the road, $17\frac{1}{2}$ meters northwest of the fence corner and $15\frac{1}{2}$ meters southwest of another fence corner. The surface stone is marked on top, thus:

$$\begin{array}{c} U \quad S \\ P \quad B \quad M \end{array}$$

Established 1895.

P. B. M. Raber.—*Raber, Mich.* Top of a $\frac{1}{4}$ -inch iron bolt leaded in top of a cut stone, 6 by 6 by 20 inches, buried $2\frac{1}{2}$ feet below the surface of the ground. It

is on south line of the main street, 65 meters west of the water's edge of the St. Marys River, 76 meters east of intersection of narrow gauge railroad and the main street, 75 meters from the entrance of a new church, 37 meters from the southwest corner of the Mud Lake Lumber Company's general store. A cedar post, 6 inches in diameter and 4 by 4 inches at the top, with the letters U. S. B. M. cut on opposite sides, is planted over the mark and projects 2 feet above the ground for a surface mark. Established 1895.

P. B. M. Gatesville.—One mile north of *Gatesville, Mich.* Top of a $\frac{3}{8}$ -inch iron bolt set in the top of a cut stone, 6 by 6 by 20 inches, marked U. S. on top and buried in the sand with its top 3 feet below the surface of the ground. A 6-inch cedar post, 4 by 4 inches on top and marked U. S. B. M. on opposite sides, is planted over the stone for a surface mark. The post projects $2\frac{1}{2}$ feet above the ground on the north side of the county road 1 mile north of Gatesville post-office, and is 7 feet west of a large hemlock stump at the corner of the road. Established 1895.

P. B. M. Hudson.—SE. corner sec. 27, T. 43 N., R. 2 E., Chippewa County, near *Raber, Mich.* Top of a $\frac{1}{4}$ -inch iron bolt leaded in the top of a cut stone, 6 by 6 by 20 inches, which is buried in a vertical position in sand with its top $2\frac{1}{2}$ feet below the surface; the letters U. S. are cut in the top of the stone. It is 13 meters northwest of a section corner stake, 3 meters south of east and west fence which is the south line of Mr. Frank Huber's property. It is 150 meters east of a point in the road opposite Mr. Huber's house, 125 meters north of creek crossing the road in the bottom of a large ravine and one mile north of county road. A cedar post 6 inches in diameter, with its upper end 4 by 4 inches square, is planted over the stone for a surface mark and has the letters U. S. B. M. cut on opposite sides. Post projects about 2 feet above ground. Established 1895.

P. B. M. Tripp.—NE. cor. sec. 21, T. 43 N., R. 2 E., Chippewa County, near *Stalwart, Mich.* Top of a three-eighths-inch iron bolt in top of a cut stone, 6 by 6 by 20 inches, buried about $2\frac{1}{2}$ feet deep. Bolt projects about one-half inch above stone, between the letters U. S. A cedar post, 6 inches in diameter and 4 by 4 inches at the top, with the letters U. S. B. M. cut on opposite sides, is planted over the stone and projects about $1\frac{1}{2}$ feet above ground. Stone is on east side of road at the turn by the bluff and $12\frac{1}{2}$ meters south of section corner. Witness trees have all burned down. Established 1895.

P. B. M. Fairview.—SE. cor. sec. 1, T. 43 N., R. 1 E., Chippewa County, near *Sterlingville, Mich.* Top of a one-half-inch bolt leaded vertically in the top of a dressed stone, 6 by 6 by 24 inches, buried $2\frac{1}{2}$ feet below the surface of the ground. A cedar post 4 inches square at the top is planted over the stone for a surface mark and projects about $2\frac{1}{2}$ feet above ground, with the letters U. S. B. M. on opposite sides. It is on the east fence line of the county road, 26 meters north of junction of roads at section corner and 38 meters south of the southwest corner of Fairview schoolhouse. Established 1895.

P. B. M. Campbell.—One mile east and one-fourth mile south of *Sterlingville Mich.* Top of a brass bolt leaded in the top of a very large boulder embedded in a field belonging to Robert Campbell. The boulder, marked U. S. and projecting 4 feet above ground, is 40 meters east of the east fence line of the north and south road, 400 meters south of road intersection, and 400 meters north of Robert Campbell's house, which stands on a high bluff 2 miles south of the Big Munuscong River.

P. B. M. Munuscong.—*Kelden, Mich.* Top of a one-half-inch iron bolt cemented

in the top of a cut stone, 6 by 6 by 24 inches, which is buried with its top 3 feet below the ground and marked by a 4 by 4 inch cedar post which is planted over the mark. The post, projecting 1 foot above the ground and marked U. S. B. M. on the sides, is 4 meters east of the east fence line of the north and south road, 91 meters north of the north end of the large barn on the east side of the road, 440 meters south of the center of the wagon bridge over the Little Munuscong River, 950 meters north of the Big Munuscong River, and 420 meters south of the Kelden post-office. Established 1895.

P. B. M. Barbeau.—*Barbeau, Mich.* Top of a one-half-inch iron bolt leaded vertically in the top of a dressed stone, 6 by 6 by 24 inches, which is buried on end, and 3 feet under the surface of the ground. It is surmounted by a 4 by 4 inch cedar post, which projects about 1 foot above ground and is marked U. S. B. M. on the sides. It is 1 meter north of the south fence of an east and west road, 59 meters west of an 8-inch lone oak tree standing in the road, and 31 meters east of a point in the road opposite the east line of a small schoolhouse which stands north of road. It is on top of a hill and in front of Mr. Alex. Scales's house 330 meters east of Barbeau post-office, which stands at the southeast corner of junction of roads. Established 1895.

P. B. M. Charlotte.—Charlotte River at Hay Lake road crossing, near *McCarron, Mich.* Top of a five-eighths-inch iron bolt projecting 2 inches above the top of a cut stone, 6 by 6 by 24 inches, which is marked by the letters U. S. and buried with its top 3 feet below the surface. For a surface mark a 4-inch squared cedar post is planted over the stone projecting 1 foot above the ground and marked with the letters U. S. B. M. on its sides. It stands 3 feet east of the Hay Lake road and 140 feet south of Charlotte River and is referenced as follows: A 4 by 4 inch stone projecting 5 inches above ground, and marked U. S. on top, is S. $64^{\circ} 00' W.$, and 59 feet distant; B. M. $3\frac{1}{2}$ is N. $0^{\circ} 50' W.$, and 126 feet distant; the northeast corner of the house on the east side of road is S. $1^{\circ} 10' E.$; the southeast corner of the house west of the road is S. $20^{\circ} 40' W.$ Established 1895.

P. B. M. Hinds.—Three miles north of Charlotte River at junction of Hay Lake and Rosedale roads, near *Rosedale, Mich.* Top of a brass bolt leaded vertically in a sandstone boulder 2 by $1\frac{1}{2}$ by $1\frac{1}{2}$ feet, buried with its flat top $2\frac{1}{2}$ feet below the surface of the ground. The surface mark is a small boulder placed over the mark, projecting 4 inches above the surface, and is 2 feet east and 1 foot south of the fence corner which is the southwest corner of property of Mrs. John Hinds. The property on the south of Rosedale road and east of Hay Lake road belongs to Van Lenven, and is $10\frac{1}{2}$ miles south of the "Soo" locks, three-fourths mile west of St. Marys River, and 3 miles due north of Charlotte River.

P. B. M. Newcomb.—St. Marys River, 7 miles below the "Soo" locks on the Hay Lake road, near *Rosedale, Mich.* Top of an iron bolt cemented in the top of a boulder buried with its surface 15 inches below the ground in the south end of an ash grove on the right bank of the St. Marys River and belonging to Mrs. Newcomb. A squared 5-inch pine post projecting 6 inches above the ground is planted over the bolt for a surface mark and is 10 meters from top of bank, 5 meters south of the south fence line of lane leading from the house to the river, and 3 meters south of line of the north side of the large barn.

P. B. M. Riverside.—Riverside Cemetery, $4\frac{1}{2}$ miles below the "Soo" locks, *Sault Ste. Marie, Mich.* Center of a brass bolt leaded horizontally in the center of the sixth

masonry course above ground at the south end of the gateway to the cemetery. The bolt, about 4 feet above ground, faces the St. Marys River and the stone is marked thus:

U S
P B M

P. B. M. Little.—Two and one-half miles below "Soo" locks, near *Sault Ste. Marie, Mich.* Gauge B. M. on upper island. Top of a square iron bolt cemented in the top of a sandstone boulder set flush with surface of ground, on upper island of Little Rapids, 10 meters back of Government light on right shore of main channel of St. Marys River.

P. B. M. Soo.—*Sault Ste. Marie, Mich.* Center of a brass bolt leaded horizontally in the north side of a red sandstone, the third above ground, at the northeast corner of the Chippewa County court-house, and is $2\frac{1}{2}$ feet above the ground and 6 inches west of the northeast corner of building.

P. B. M. A.—*Sault Ste. Marie, Mich.* Summit of a square, 2 by 2 inches, cut on top of masonry on the north side of the Weitzel lock. It is 10 inches south of the north edge of masonry and is directly in line of lower gate at the upper end of the Weitzel lock, and about 150 meters west of the Government building. Established 1881.

P. B. M. B.—*Sault Ste. Marie, Mich.* Summit of a square, $1\frac{1}{2}$ by $1\frac{1}{2}$ inches, cut on top of masonry at the foot and on the north side of Poe lock. It is 5 inches south of the south side of steps leading down on the north side of Poe lock, and is directly in line with front edge of the second step from bottom.

P. B. M. Meridian.—*Sault Ste. Marie, Mich.* Summit of a square head of an iron bolt leaded in the top of a stone monument marking the intersection of the principal meridian and the south line of the Sault Ste. Marie grant. It is in line of center of Meridian street (Meridian street bounds Fort Brady on the west), and is 4 feet east and 12 feet north of southeast corner of stone abutment of plate girder bridge, carrying Soo Railroad over wagon road. Mark is 2 feet below the surface of the ground, and the hole is walled up and covered with large stones. Established 1892.

P. B. M. Neesville.—*Sault Ste. Marie, Mich.* Top of a brass bolt leaded vertically in the top of a large sandstone boulder which lies, well embedded, in small ditch in small cut of the Soo Railroad. The bolt is 1.95 meters south of south rail of track, 35 meters west of road crossing, 63 meters east of point of curve of track, and 185 meters east of smokestack of Northwestern Leather Company's tannery. Marked in 3-inch letters, U S.

P. B. M. 1.—On the Duluth, South Shore and Atlantic Railroad, 200 meters north of the 3-mile post, near *Sault Ste. Marie, Mich.* Top of a copper bolt set in the summit of a large boulder 12 feet west of the center line of the track and marked on the east face with the letters U. S. B. M. Established 1892.

P. B. M. Solomon.—Brush Point, St. Marys River, near *Sault Ste. Marie, Mich.* Top of a brass bolt leaded vertically in the top of a sandstone, 15 inches by 12 inches by 6 inches, buried in Solomon's clearing, 3 feet below the surface of the ground, $3\frac{1}{2}$ meters west of a 15-inch white-pine tree, on which is blazed a 9-inch triangle. The surface mark—a stone 15 by 8 by 6 inches, marked U S on top and projecting 6 inches above the ground—is placed over the bolt and is 16 meters south of the top of the river bank on the line of an old fence running back from the river 925 meters, by shore line, below Brush Point.

P. B. M. Johnson.—Destroyed.

P. B. M. Brush.—Brush Point, near *Sault Ste. Marie, Mich.* Top of center one of 5 wire spikes driven in the top of a very large hub on top of low bank and is 5 meters back of staff gauge and 35 meters west of the northwest corner of a large boathouse on the south shore of St. Marys River.

P. B. M. 2.—On the Duluth, South Shore and Atlantic Railroad, near *Sault Ste. Marie, Mich.*, 29 feet north of the sixth milepost. Top of a copper bolt leaded vertically in the summit of a boulder buried to a depth of 4 feet, 41 feet west of the center of the track. A red sandstone, projecting 1 foot above the ground and marked U. S. B. M. on top, is set directly over the bolt for a surface mark. Established 1892.

P. B. M. 3.—On the Duluth, South Shore and Atlantic Railroad, near *Brimley, Mich.*, 21½ feet north of the 9-mile post. Top of a copper bolt leaded vertically in the summit of a stone monument buried 31 feet west of the center of the track to a depth of 4 feet. A 6-inch square cedar post projecting 16 inches above the ground is planted over the bolt for a surface mark.

P. B. M. 4.—*Brimley, Mich.* On the Duluth, South Shore and Atlantic Railroad 200 feet east of the station. Top of a copper bolt leaded vertically in the top of a stone monument 18 inches square, 4 feet below the surface of the ground, 34½ feet north of the center of the track, 192 feet west of the west end of the Waiska River railroad bridge, and due north of the frog for the branch railroad across Waiska Bay. An old cedar post carved with the letters U. S. B. M. stands 1 foot west of the bolt, and a red sandstone 20 by 8 by 6 inches, projecting 8 inches above the ground and marked

U S B M
No. 4

lies directly over the bolt. Established 1892.

P. B. M. Bay Mills.—*Bay Mills, Mich.* Top of a brass bolt leaded vertically, 8 inches from the west and 7 inches from the north side of the pedestal (marked U. S.) on the southeast foundation for the steel water tank tower which stands on the south side of Hall & Munson's factory power house.

P. B. M. Mission.—Two and one-half miles above *Bay Mills, Mich.* Top of a brass bolt leaded vertically in the top of a sandstone 14 by 10 by 6 inches and buried about 3 feet under the ground on top of a point of a sand terrace in the upper end of the mission and on the west side of a broad ravine running back from St. Marys River. It is about 4 meters back from crest of high bank of river, 16 meters northeast of a spruce tree blazed with a 4-inch triangle (T. B. M. No. 109 on root of tree), 42 meters east of a log house owned by Duel Cameron, 142 meters above a small bridge over small creek crossing the road in bottom of ravine, and 1 mile above store at lower end of mission. A sandstone 8 by 10 by 15 inches is set directly over the P. B. M. for a surface mark and projects about 5 inches above ground. Marked

U S
P B M

P. B. M. Δ .—*Iroquois Point, Mich.* Top of a brass bolt leaded vertically in top of a stone monument 6 inches square set in the ground at the east side of the lighthouse yard, 2 feet west of the north and south fence, $37\frac{1}{2}$ feet east of the northeast corner of lighthouse building and about on line with north side of building. Marked U S.

P. B. M. Iroquois Lighthouse.—*Iroquois Point, Mich.* Center of a brass bolt leaded horizontally in the center of a large stone on north side of Iroquois Lighthouse. Stone is in the top course of masonry of foundation of the lighthouse which is built of brick and was erected in 1870. It is 5 feet east of old B. M., and marked

U S
P B M

P. B. M. Old B. M.—*Iroquois Point, Mich.* A square notch cut in top of foundation of the lighthouse on north side and 5 feet west of P. B. M. Iroquois Lighthouse. Marked \square B. M.

P. B. M. Iroquois 1.—*Iroquois Point, Mich.* Top of a brass bolt leaded vertically in the top of a stone 8 by 8 by 20 inches, buried $2\frac{1}{2}$ feet underground in the southeast corner of the lighthouse yard. It is 1 foot from the south fence and 2 feet from the east fence. A stone 8 by 8 by 18 inches is set in ground directly over the P. B. M. for a surface mark and projects about 6 inches above ground. It is $11\frac{1}{2}$ meters east and 18 meters south of extreme southeast corner of the lighthouse building. Marked

U S
P B M

P. B. M. Iroquois.—*Iroquois Point, Mich.*—Top of an iron bolt 1 inch square cemented in the top of a boulder 4 meters east of walk from light-house to engine house 29 meters south of east entrance of engine house, 60 meters south of shore of St. Marys River and 30 meters north of high bank.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN ESCANABA AND MARQUETTE, MICH.

(From information furnished by U. S. Lake Survey. The other bench marks on this line are described on p. 791, App. 8, Report for 1899.)

B. M. 3 (1874).—*Marquette, Mich.* (Reported destroyed.)

B. M. 11 (1896).—Is on the water table 10 inches from southwest corner on south side of new pump house of city waterworks, *Marquette, Mich.*

DESCRIPTIONS OF PERMANENT BENCH MARKS AT SAND BEACH AND MACKINAW, MICH., AND MILWAUKEE, WIS., CONNECTED WITH THE PRECISE LEVEL NET BY WATER LEVELING ONLY.

(From information furnished by U. S. Lake Survey.)

U. S. B. M.—*Sand Beach, Mich.* Is on a granite boulder about three-fourths of a mile from the custodian's office. The boulder is at the edge of the bluff and nearly in line with the north side of the west pier. The bench mark is in relief, about 3 inches square, three-eighths inch above the remainder of the stone and bears the letters U. S. B. M.

U. S. B. M. A.—*Sand Beach, Mich.* Is the top of a round iron rod 1 inch in diameter, slightly sharpened at the top and resembling a drift bolt. The rod is fox-

wedged into the rock, and is at the west end of the United States boathouse in front of the United States Engineer's office.

U. S. B. M. B.—*Sand Beach, Mich.* Is the top of a mill shaft $1\frac{1}{2}$ inches in diameter, with head turned on at the top; it is fox-wedged into the rock just south of the United States boathouse and near the east end.

U. S. B. M. E.—*Sand Beach, Mich.* Is the top of a bar driven into a rock under the dock, about one-fourth mile from the United States Engineer's office. It is about 250 feet from the outer end of dock.

U. S. B. M. Jenks.—*Sand Beach, Mich.* Is on the water table at the southwest corner of J. Jenks & Co.'s brick store. The bench mark is marked.

U. S. B. M. Boulder in Harbor.—*Sand Beach, Mich.* Is the center of a square cut on a boulder about 350 feet south of the United States Engineer's office. This bench mark was established in 1873-74 by Assistant Engineer Gilbert.

B. M. 1.—*Mackinaw, Mich.* Is a level summit 1 by 1 inch on a shelf 1 by 2 inches cut in the rough stone face of the first course of masonry on the north side of "Old Point Mackinaw" lighthouse. It is $1\frac{1}{2}$ feet above the ground and 2 feet west of the center of a slot window facing the water. The letter "B" is cut above the east end of the shelf.

B. M. 2.—*Mackinaw, Mich.* Is the top edge of stone forming doorsill in the light keeper's house that is nearest the lighthouse tower, the bench mark being at the easterly side of the door on the level part of the stone next to the bevel of the sill and at the middle of the 8-foot stone the west half of which forms the doorsill.

B. M. 3.—*Mackinaw, Mich.* Is the top of a $\frac{1}{2}$ -inch brass tube set vertically in a block of concrete 1 foot in diameter and 2.7 feet long, set 1.8 feet below the surface of the ground just north of the railway crossing on Huron avenue. It is 13.3 feet north of north rail of most northerly track of Michigan Central Railroad, 6.9 feet south of south rail of Grand Rapids and Indiana Railroad, 6.4 feet east of lamp-post between above-named tracks, 2.6 feet west of west edge of plank sidewalk on west side of Huron avenue. Top of concrete is marked



B. M. R.—*Mackinaw, Mich.* Is the top of a railroad rail set vertically in the ground on the west side of Huron avenue, near the west street line. It is 44.8 feet north of bench mark No. 3; 184.1 feet west of northwest corner of pump house, measurement made in line with north face of pump house, which is on the east side of Huron avenue. The rail projects about 1 foot above ground.

B. M. 4.—*Mackinaw, Mich.* Is the top of a $\frac{1}{2}$ -inch brass tube set vertically in a concrete block 1.4 feet long, set 2.3 feet below the ground. It is 64.7 feet east of B. M. R.; 85.4 feet northeast of B. M. 3; 119.4 feet west of northwest corner of pump house, on east side of Huron avenue, measured in line with north face of pump house. Top of the concrete is marked



B. M. 1.—*Milwaukee, Wis.* This bench mark was formerly on house of Dr. I. A. Lapham, but has been destroyed by repairs to the house.

B. M. 2.—*Milwaukee, Wis.* Stone monument in court-house square, near the southeast corner thereof, in the Seventh Ward.

B. M. 3.—*Milwaukee, Wis.* Stone monument on sidewalk at southeast corner of Eighth and Chestnut streets, Second Ward.

B. M. 4.—*Milwaukee, Wis.* The highest point of the stone water table at the corner of the building, Ludington's Block, northwest corner of East Water and Wisconsin streets.

B. M. 5 (1876).—*Milwaukee, Wis.* A cross on the masonry of the Kilbourne grist-mill at the foot of Poplar street. It is cut in the stone $10\frac{1}{2}$ inches from the southeast corner on the east wall and about 3 feet above the surface of the ground.

DESCRIPTIONS OF BENCH MARKS FROM OLCOTT, N. Y., TO BUFFALO, N. Y., ESTABLISHED OR CONNECTED WITH BY PRECISE LEVELS OF UNITED STATES LAKE SURVEY IN 1901.

(From information furnished by U. S. Lake Survey.)

P. B. M. 4.—Is in *Olcott, N. Y.*, on stone water table at southwest corner of a two-story brick building, now owned and occupied as a general store by C. D. Shaw, on north side of street about 200 meters west of wagon bridge over Eighteen-mile Creek, being a square cut on stone. Established by Board on Deep Waterways.

P. B. M. 5.—Is in *Olcott, N. Y.*, on top of hill west of Eighteen-mile Creek, 125 meters south of main road leading west from wagon bridge over creek, on stone water table at southwest corner of a one-story schoolhouse, which is built of concrete and veneered with water-worn pebbles, being a square cut on stone. Established by Board on Deep Waterways.

P. B. M. 6.—Is in *Olcott, N. Y.*, on top of bridge seat at north end of west abutment of a wagon bridge over Eighteen-mile Creek, being a square cut on stone 4 inches west and $1\frac{1}{2}$ inches south of northeast corner, and marked U □ S.

P. B. M. 3.—Is in *Olcott, N. Y.*, on stone cap of foundation under west post of porch over carriageway in front of Albright Hotel, being a square cut on southeast corner of stone and marked

U S

□

P. B. M. 2.—Is in *Olcott, N. Y.*, on large stone door sill at front entrance of the Albright Hotel, being a small square cut on west side of entrance, $1\frac{1}{2}$ inches back from front edge of stone and 3 inches east of west door jamb.

P. B. M. 1.—Is in *Olcott, N. Y.*, on south end of stone door sill at front entrance to the First Universalist Church (erected in 1858), which is built of red brick and situated on the east side of the first north-and-south street east of Eighteen-mile Creek and about 250 meters south of the south shore of Lake Ontario, being a small square cut on front edge of stone, 4 inches north of a large square on same stone, which is the old bench mark at same elevation. Established by Board on Deep Waterways.

T. B. M. 60.—Is about 300 meters west of *Newfane, N. Y.*, on the first step above the bridge seat at the south end of the east abutment of the New York Central and Hudson River Railroad bridge over Eighteen-mile Creek, being the top of a square cut on southwest corner of stone step.

T. B. M. 59.—Is near *Coomer*, three-fourths mile west of *Eighteen-mile Creek, N. Y.*, on the north end of the west abutment of a railway bridge over Hopkins Creek, on the New York Central and Hudson River Railroad, being the summit of a small square cut on top of stone.

T. B. M. 53.—Is about $1\frac{1}{2}$ miles east of *Wilson, N. Y.*, in the south root of a poplar tree $2\frac{1}{2}$ feet in diameter standing on fence line on north side of east-and-west road, at east end of hedge row and at the southwest corner of lawn in front of the residence of Mr. H. Pease, being the top of a 30-d. wire nail driven into root $2\frac{1}{2}$ feet south of trunk of tree.

P. B. M. *Wilson*.—Is in *Wilson, N. Y.*, on water table at the northwest corner of Exley Methodist Episcopal Church, being the center of a brass bolt, 17 inches east of the northwest corner, leaded horizontally and marked thus:

U S
○
P B M

T. B. M. 47.—Is 4 miles east of *Ransomville, N. Y.*, or 697 meters west of milepost 158, on the south end of the west abutment of a plate girder railway bridge over the east branch of Twelve-mile Creek, on the New York Central and Hudson River Railroad, being a square cut in top of bridge seat and marked U □ S.

T. B. M. 43.—Is 2 650 meters east of *Ransomville, N. Y.*, or 340 meters east of milepost 161, at edge of timber and on north end of west wall of open culvert, on the New York Central and Hudson River Railroad, being a square cut on stone, on top of second step from top, 6 inches from north and east edges of the stone, respectively.

P. B. M. *Ransomville*.—Is in *Ransomville, N. Y.*, on water table 20 inches west of northeast corner of brick building standing on the southwest corner of intersection of the two main streets of the village and owned as well as occupied by W. H. H. Ransom & Son as a general store, being the top of a brass bolt leaded vertically in top of water table and marked U ○ S.

T. B. M. 41.—Is in *Ransomville, N. Y.*, 100 meters east of the east end of *Ransomville Station* on the south end of the west abutment of a plate girder railway bridge on the New York Central and Hudson River Railroad, being the top of a small square cut on the third stone step from ground, 3 inches from the south and east edges of stone step and about 6 inches below bridge seat.

T. B. M. 37.—Is 1 690 meters north of *Model City, N. Y.*, and 225 meters north of road crossing, on flange of rail set in ground 2 meters west of track and marking the one hundred and sixty-seventh milepost on the New York Central and Hudson River Railroad, being the top of a square cut on flange.

P. B. M. *Model City*.—Is in *Model City, N. Y.*, about 200 meters south of railway station in the south face of the fifth stone above ground in southeast corner of the Erie Preserving Company's warehouse, being the center of a brass bolt leaded horizontally in stone 12 inches west of corner, 30 inches above ground, and 13 inches below platform in front of building.

T. B. M. 35.—Is 1 892 meters southwest of *Model City, N. Y.*, and just east of railroad crossing of main road leading east from Lewiston, on stone coping at north end of box culvert on the New York Central and Hudson River Railroad; being a square cut on stone.

P. B. M. Lewiston.—Is in *Lewiston, N. Y.*, at corner of Center and Ninth streets, on the northwest corner of stone sill of north door of west wing of old seminary building; being a square cut on stone. Established by Board on Deep Waterways.

P. B. M. Lewiston Heights 2.—Is 101 meters east of the center of *Lewiston Heights, N. Y.*, in face of solid rock ledge on upper side of wagon road leading down from Lewiston Heights station to Lewiston; being the center of a brass bolt leaded horizontally in vertical face of rock 21 inches below top of ledge, and marked thus in 3-inch letters:

U S
○
P B M

T. B. M. 31.—Is in *Lewiston Heights, N. Y.*, on top of retaining wall on south side of wagon road, 3 meters north of center of track of the New York Central and Hudson River Railroad and 12 meters east of northeast corner of Lewiston Heights station; being the top of a small square cut on large stone.

P. B. M. Lewiston Heights 1.—Is near *Lewiston Heights, N. Y.*, on a flat rock at north end of small drain under railway, approximately 30 feet in front of north pillar of Penjerrick Gateway, which is on east side of military road and about 200 feet south of junction with River road; being the summit of a small square cut on rock. This mark is not very permanent and is liable to be disturbed. Established by Board on Deep Waterways.

P. B. M. University.—Is about 2 miles north of *Niagara Falls, N. Y.*, and 60 meters east of top of gorge of Niagara River, in west corner of the main building of Niagara University; being the center of a brass bolt leaded horizontally into stone $4\frac{1}{2}$ inches east of corner and 20 inches above ground.

P. B. M. Suspension Bridge.—Is in *Niagara Falls, N. Y.*, in the northwest corner of passenger station called *Suspension Bridge* on the New York Central and Hudson River Railroad; being the center of a brass bolt leaded horizontally into center of seventh stone above the water table, 43 inches above the platform and 6 inches south of the northwest corner of the building.

T. B. M. 24.—Is in *Niagara Falls, N. Y.*, on top of granite boulder, about the size of an oil barrel, on the west line of Sugar street, 65 meters south of the New York Central and Hudson River Railroad track to Lockport and 426 meters north of Ontario street; being the top of a small square cut in top of boulder.

P. B. M. Niagara 1.—Is in *Niagara Falls, N. Y.*, on a stone $5\frac{1}{2}$ inches square with a small square cut on northwest corner, now used as a reference stone for the center line of the tunnel of the Niagara Falls power plant, and is set in concrete in the gutter about 10 feet northwest of entrance to main building of the Niagara Falls power plant, 3 meters north of north door jamb and 1 meter out from building; being the top of a copper bolt leaded in the center of the stone.

P. B. M. Echota.—Is in *Niagara Falls, N. Y.*, on the west end of stone sill of west door on south side of the New York Central and Hudson River Railroad station called *Echota*; being the top of a small square in the southeast corner of a larger square cut on the stone. Established by Board on Deep Waterways.

P. B. M. Niagara 2.—Is in *Niagara Falls, N. Y.*, on sill of first window west of northeast corner of Niagara Falls Power Company's power house; being the top

of a brass bolt leaded vertically in east end of stone, $5\frac{1}{4}$ feet from front of building, 5 inches back from front edge of window sill, 7 inches west of east side of window and on side of building facing Buffalo avenue.

P. B. M. Schoolhouse.—Is in *Niagara County, N. Y.*, on stone water table at southwest corner of brick schoolhouse in district No. 5, Niagara Township, 1 mile west of *La Salle* on north side of main river road; being the top of a square cut on stone. Established by Board on Deep Waterways.

B. P. M. *La Salle* No. 2.—Is in *La Salle, N. Y.*, on the top of water table at the southeast corner of brick residence belonging to Mr. E. H. Smith, about one-fourth mile west of the New York Central and Hudson River Railroad station on main road along river front; being the top of a brass bolt leaded vertically in water table.

P. B. M. *La Salle* 1.—Is in *La Salle, N. Y.*, just south of *La Salle* station, on the northwest corner of bridge seat of east abutment of the New York Central and Hudson River Railroad bridge over Cayuga Creek; being the top of a square cut on stone. Established by Board on Deep Waterways.

T. B. M. 16.—Is near *La Salle, N. Y.*, 2 625 meters north of Niagara Falls and Buffalo Electric Railway bridge, over railroads and roadway, on the south root of an elm tree 28 inches in diameter which stands alone just inside the southeast corner of small field near fence on west side of road along river front; being the top of a 20-penny wire nail driven into root.

P. B. M. Wheatfield.—Is near *La Salle, N. Y.*, in *Wheatfield Township, Niagara County, N. Y.*, on the south end of stone water table on east front of brick schoolhouse, which is in district No. 2, and stands on the right bank of Niagara River and on main road 510 meters below Niagara Falls and Buffalo Electric Railway bridge over railroads and wagon road; being a square cut on stone. Established by Board on Deep Waterways.

P. B. M. Crossing.—Is between *North Tonawanda* and *La Salle, N. Y.*, on the northeast corner of the north foundation of the first iron trestle bent of trestle over roadway west of west pier of bridge carrying electric railway over the New York Central and Hudson River Railroad and the Erie Railroad, and about 1 mile below city limits of North Tonawanda; being the top of a 1-inch anchor bolt in foundation stone and marked with a chisel thus: +. Established by Board on Deep Waterways.

P. B. M. North Tonawanda 2.—Is in *North Tonawanda, N. Y.*, on stone water table 2 meters south of entrance to the old engine house (1873) of the Tonawanda Iron and Steel Company, situated on the right bank of the Niagara River and on the west side of Main street; being the top of a small square in the northeast corner of large square cut in corner of stone. Established by Board on Deep Waterways.

P. B. M. North Tonawanda 1.—Is in *North Tonawanda, N. Y.*, on west end of granite doorsill at the most eastern entrance to the front of Ascension Church, on the corner of Vandervoort and Robinson streets; being the top of a square cut on top of stone. Established by Board on Deep Waterways.

P. B. M. Tonawanda 2.—Is in *Tonawanda, N. Y.*, on the northeast surface stone of the south abutment of the Tonawanda Dam, being the top of a high point between bolted iron bars, in small square inside of large square cut on top of stone. Established by Board on Deep Waterways.

P. B. M. Tonawanda 1.—Is in *Tonawanda, N. Y.*, on stone water table on west side of steeple of Christian Chapel Church, a red brick building on southeast corner of Broad and Seymour streets, being the intersection of two cross marks cut in center of large square on top of stone. Established by Board on Deep Waterways.

P. B. M. State Ditch.—Is in *Tonawanda, N. Y.*, on top of stone coping on west end of north abutment of bridge over State Ditch on Main street, 1 200 meters south of bridge over Erie Canal on Main street, being the top of a brass bolt leaded vertically in top of stone and marked thus:

U S
○
P B M

T. B. M. 11.—Is in *Tonawanda, N. Y.*, on top of stone cover of catch-basin on east side of Main street, 5 meters west of German Cemetery fence and 27 meters south of entrance to cemetery; being a square cut on top of stone 4 inches from west and south sides of stone, respectively.

T. B. M. 9.—Is at *Pullman, N. Y.*, on military road, on the southeast root of an elm tree 20 inches in diameter standing farthest north in a line of five trees, 12 meters west of center of electric-car tracks, and 180 meters north of large frame house on west side of road opposite steel ball factory at Pullman station; being the top of a 20-penny wire nail driven into the root.

T. B. M. 8.—Is on the city limits of *Buffalo, N. Y.*, on top of large boulder on north side of military road on street line 220 meters north of large saloon building at city limits and bearing the following sign in red letters on the top: "Globe Liniment is the Best;" being the top of a square cut on top of boulder 6 inches from west and south sides, respectively.

T. B. M. 7.—Is in *Buffalo, N. Y.*, on the west root of an elm tree 13 inches in diameter standing 73 meters west of military road and 145 meters south of Delaware, Lackawanna and Western Railroad tracks; being the top of a 20-penny wire nail driven into root.

P. B. M. St. John.—Is in *Buffalo, N. Y.*, on water table on the front of St. John the Baptist Church on the northwest corner of the intersection of Hertel avenue and East street, 8 inches east of east door jamb and 1 inch back from edge of water table; being the highest point in square cut on stone.

P. B. M. Guard Lock.—Is in *Buffalo, N. Y.*, in the center of coping stone on tow-path side of guard lock of Erie Canal, 600 meters below International Bridge over Erie Canal at Black Rock; being the highest point in small square cut in the southeast corner of larger square which is opposite the hinge of the upper gate and 7 meters below upper end of lock, marked thus: □. Said to be established by Board on Deep Waterways, but the descriptions differ slightly and the Deep Waterway elevation is lower by 6 centimeters.

P. B. M. Black Rock.—Is in *Buffalo, N. Y.*, on top of bottom step, or sixth course of masonry below bridge seat, of south end of east abutment of bridge No. 192 over Erie Canal on Bridge street, or the first bridge over Erie Canal below the International Bridge; being the top of a brass bolt leaded vertically into top of stone 6 inches from south and west faces of stone, respectively.

P. B. M. International Bridge 2.—Is in *Buffalo, N. Y.*, on a projection of stone in fourth course of masonry below bridge seat on the north end of east abutment of International Bridge over main channel of Niagara River; being a square cut on stone 1.735 meters below bridge seat and 1.150 meters back of the northwest corner of abutment, the stone above being marked in white paint thus:

"U. S. B. M."

88

Established by Board on Deep Waterways.

P. B. M. International Bridge 1.—Is in *Buffalo, N. Y.*, on projecting ledge of third stone from south, and fifth course below bridge seat of east abutment of International Bridge over Erie Canal, being the highest point of square cut on stone. Established by Board on Deep Waterways.

P. B. M. Waterworks.—Is in *Buffalo, N. Y.*, on stone window sill of center window on the river side of main building of pumping station of the Buffalo Waterworks, being the center of a brass bolt leaded horizontally into stone 6 inches from north end of sill and 35 inches above the water table at the ground, marked thus:

U. S.

○

P. B. M.

P. B. M. Fire Station.—Is in *Buffalo, N. Y.*, on water table at the northwest corner of fire-tug station at the foot of Genesee street, on lake front; being the top of knob cut on corner of stone, $2\frac{1}{2}$ feet above the pavement.

L. H.—Is in *Buffalo, N. Y.*, on plinth of most northerly Buffalo Lighthouse, south of United States pier (and connected with the pier) and in line with Erie street; being the top of a high point on east corner and upper surface of plinth.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN BUFFALO AND OLCOTT, N. Y.

(See Report of Board on Deep Waterways, 1900, Part II, pp. 1037-1038.)

L. H.—Is at *Buffalo, Erie County, N. Y.*

International Bridge 1.—Is at *Buffalo, Erie County, N. Y.* (See above.)

Guard Lock.—Is at *Buffalo, Erie County, N. Y.* (See p. 657.)

D. W. Cherry.—Is near *Tonawanda, Erie County, N. Y.*, on west abutment of Cherry's Bridge, and is a square cut on the second stone below the coping, projecting back of the abutment. This bench mark is apparently not identical with N. Y. 543,* or if identical the elevation has changed.

Tonawanda 1.—Is at *Tonawanda, Erie County, N. Y.* (See p. 657.)

Tonawanda 2.—Is near *Tonawanda, Erie County, N. Y.* (See p. 656.)

North Tonawanda 1.—Is at *North Tonawanda, Niagara County, N. Y.* (See p. 656.)

North Tonawanda 2.—Is at *North Tonawanda, Niagara County, N. Y.* (See p. 656.)

D. W. Sawyers Creek.—Is near *Pendleton Center, Niagara County, N. Y.*, and is a square cut on stone water table at southwest corner of barrel-organ factory.

D. W. Pendleton 1.—Is at *Pendleton Center, Niagara County, N. Y.*, and is a square

* See description of bench marks, Albany to Buffalo.

cut on top of boulder, about 3 feet in diameter, of light colored gneiss or granite. The boulder is on the east side of the highway, and about 400 feet north of Erie Railroad station.

D. W. Pendleton 2.—Is at *Pendleton Center, Niagara County, N. Y.*, and is a square cut on corner of stone water table at the west corner of brick house owned by H. S. Taylor. Building is east of the church.

D. W. Lockport 1 = N. Y. 554.—Is about a mile west of *Lockport, Niagara County, N. Y.*, and is a square cut on projection of stone at angle of abutment and wing wall, lower course, south angle of west abutment of the more westerly of the two subways under the New York Central Railroad, at head of gulf.

D. W. Lockport 2.—Is about $2\frac{1}{2}$ miles northwest of *Lockport, Niagara County, N. Y.*, and is a square cut on the north corner of water table of two-story red-brick dwelling occupied by Mr. Pickles. Building is on the stone road.

D. W. Lockport 3.—Is at *Lockport, Niagara County, N. Y.*, and is a square cut on the west end of the stone doorstep of red-brick schoolhouse (No. 13). Building is at intersection of turnpike and Ewing road.

D. W. Wrights.—Is at *Wrights Corners, Niagara County, N. Y.*, and is a square cut on stone water table on two-story brick residence occupied by Mr. Boist, at the northeast corner of house. House is about 300 feet north of intersection of Lake avenue and turnpike road.

U. S. G. S.—Is $1\frac{1}{2}$ miles south of *Newfane, Niagara County, N. Y.*, in cemetery on east side of Lake avenue, and is the loop of capital P, on lot monument, Pettit lot, southeast corner.

D. W. Newfane 1.—Is at *Newfane, Niagara County, N. Y.*, and is a square cut on cut-stone bridge seat of iron highway bridge on crossroad over Eighteen Mile Creek in northern portion of village. Square is at north end of east abutment.

D. W. Newfane 2.—Is about 2 700 feet north of *Newfane, Niagara County, N. Y.*, and is a square cut on southwest corner of stone water table of brick schoolhouse (No. 10) on west creek road.

Olcott 5.—Is at *Olcott, Niagara County, N. Y.* (See p. 653.)

Olcott 4.—Is at *Olcott, Niagara County, N. Y.* (See p. 653.)

Olcott 1.—Is at *Olcott, Niagara County, N. Y.* (See p. 653.)

DESCRIPTION OF PERMANENT BENCH MARKS FROM LA SALLE TO LEWISTON, N. Y.

(See Report of Board on Deep Waterways, 1900, Part II, p. 1039.)

D. W. Monument.—Is near *La Salle, N. Y.*, and is a square cut at northwest corner of cut-stone monument between tracks. Monument is numbered 16 and is at a point about 600 feet west of military road, where Cataract Construction Company's line branches to southwest.

L. S. Lewiston Heights 1.—Is a Deep Waterways bench mark at *Lewiston Heights, N. Y.* (See p. 655.)

L. S. Lewiston.—Is a Deep Waterways bench mark at *Lewiston, Niagara County, N. Y.* (See p. 655.)

D. W. Lewiston 3.—Is at *Lewiston, Niagara County, N. Y.*, and is a square cut on water table northeast corner of foundation of brick store owned by Eugene Murphy. Building is on lot 252, on south side of Center street, between Fourth and Fifth streets.

D. W. Lewiston 4.—Is near *Lewiston, Niagara County, N. Y.*, and is head of spike driven in bench cut on root of white-oak tree 12 inches in diameter. Tree is just west of River road, 1.3 miles north of Lewiston, and about 1 600 feet north of the residence of F. Hays.

D. W. Lewiston 5.—Is near *Lewiston, Niagara County, N. Y.*, and is a square cut on top of west wing of north abutment of trestle No. 2, on Gorge route over Fish Creek, about 5 600 feet south of New York Central Railroad station. The square is on the southeast corner of fifth stone from west end of wing.

DESCRIPTIONS OF PERMANENT BENCH MARKS ON CANADIAN SIDE OF NIAGARA RIVER
FROM INTERNATIONAL BRIDGE TO FOOT OF LAKE ERIE.

(See Report of Board on Deep Waterways, 1900, Part II, p. 1038.)

L. S. International Bridge 2.—Is at *Buffalo, N. Y.* (See p. 658.)

D. W. International Bridge 3.—Is in *Canada*, near *Buffalo, N. Y.*, at the northeast corner of west or Canadian abutment of the *International Bridge*, and is a square cut on projecting face of stone of fifth course below bridge seat.

D. W. Fort Erie.—Is at *Fort Erie, Welland County, Ontario, Canada*, and is the head of a spike driven in bench cut on root of cottonwood tree. The tree is about 220 feet north of Fort Erie Ferry landing, and about 10 feet east of the Maine Central Railroad tracks.

D. W. Lake Erie.—Is at foot of *Lake Erie*, in *Welland County, Ontario, Canada*, and is the head of a spike driven in bench cut in north tree of row of six willows just south of group of five willows in front of Constable Metcalf's house, at the head of Niagara River on Canadian side.

DESCRIPTION OF PERMANENT BENCH MARKS FROM NORTH TONAWANDA TO NIAGARA
FALLS, N. Y.

(See Report of Board on Deep Waterways, 1900, Part II, p. 1038.)

L. S. Crossing.—Is a Deep Waterways bench mark near *La Salle, N. Y.* (See p. 656.)

L. S. Wheatfield.—Is a Deep Waterways bench mark near *La Salle, N. Y.* (See p. 656.)

L. S. Lasalle.—Is a Deep Waterways bench mark at *La Salle, N. Y.* (See p. 656.)

L. S. Schoolhouse.—Is a Deep Waterways bench mark near *La Salle, N. Y.* (See p. 656.)

L. S. Echota.—Is a Deep Waterways bench mark at *Echota, N. Y.* (See p. 655.)

L. S. Niagara 1.—Is a Deep Waterways bench mark at *Niagara, N. Y.* (See p. 655.)

D. W. Niagara 2.—Is at *Niagara, N. Y.*, at foot of Elm tree just outside of curb on Buffalo avenue, and 800 feet west of entrance to power house of the Niagara Falls Power Company, and is the top of a spike in wood set down in pit with brick walls.

DESCRIPTIONS OF PERMANENT BENCH MARKS FROM RENSSELAER (GREENBUSH), N. Y., TO OSWEGO, N. Y., CONNECTED WITH OR ESTABLISHED BY PRECISE LEVELS OF UNITED STATES LAKE SURVEY, 1902.

(From information furnished by United States Lake Survey.)

Gristmill.*—See page 848, Appendix 8, Report for 1899.

L. S. 1.—Is at *Rensselaer, N. Y.* It is the center of a three-eighths-inch brass bolt leaded horizontally in the side facing the river of the stone foundation of Irwin Steam Mill and Elevator near the river at the foot of and on the south side of Second avenue. Bench marks 6.7 feet downstream from "Gristmill" or old Greenbush bench mark, 5 feet above ground, 4.3 feet upstream from upper jamb of door facing river, and 8.7 feet downstream from upper face of building. It is marked U. S. B. M. above the bolt and A beneath it.

L. S. 2.—Is at *Rensselaer, N. Y.* It is the center of a three-eighths-inch brass bolt leaded horizontally in the west wing wall of south abutment of railroad bridge over Second avenue. It is 23.2 feet south of north face of south abutment, 4.5 feet above ground, and 23.2 feet north of south end of wing wall. It is marked U. S. B. M. over the bolt and B beneath it.

L. S. 3.*—Is at *Rensselaer, N. Y.* It is a cross cut on top of stone at southwest corner of foundation of water tank at the south end of viaduct on which Broadway street crosses the New York Central and Hudson River Railroad tracks. Deep Waterways bench mark, 1898.

L. S. 4=1 (1875).—Is at *East Albany, N. Y.* (See p. 848, App. 8, Report for 1899.)

L. S. 5=2 (1875).—Is at *Albany, N. Y.* (See p. 848, App. 8, Report for 1899.)

L. S. 6.—Is at *Albany, N. Y.*, on southwest gate of west lock of Lock No. 2. New York State B. M. No. 5, 1901. (See note 42, p. 584.)

L. S. 7.—Is north of *Albany, N. Y.*, in first step of towpath abutment, east end of south wing wall of Delaware and Hudson Railroad bridge over Erie Canal. New York State B. M. No. 6, 1901. (See note 5, p. 580.)

L. S. 8.—Is at *Watervliet, N. Y.*, on coping of retaining wall at south end of towpath parapet of culvert about $1\frac{1}{4}$ miles north of Delaware and Hudson Railroad bridge over canal, marked \odot . New York State B. M. No. 7, 1901.

L. S. 9=6 (1875).—Is north of *Watervliet, N. Y.* (See p. 848, App. 8, Report for 1899.)

L. S. 10=7a (1875).—Is at *Cohoes, N. Y.* (See p. 848, App. 8, Report for 1899.)

L. S. 11=8a (1875).—Is at *Cohoes, N. Y.* (See p. 848, App. 8, Report for 1899.)

L. S. 12.—Is at *Cohoes, N. Y.*, on southwest gate of west Lock No. 18. (See note 42, p. 584.) New York State B. M. No. 30, 1901.

L. S. 13.—Is 2.9 miles north of *Cohoes, N. Y.*, at end of the south wing wall of towpath abutment of bridge No. 33. New York State B. M. No. 35, 1901. (See note 43, p. 584.)

L. S. 14.—Is at *Crescent, N. Y.*, on top of parapet wall at southwest corner of southeast wing of Lower Mohawk aqueduct. New York State B. M. No. 36, 1901, marked \odot .

L. S. 15.—Is 5 miles east of *Vischers Ferry, N. Y.*, in sixth course below coping in center of face of towpath abutment of bridge No. 37. New York State B. M. No. 39, 1901. (See note 44, p. 584.)

* See also descriptions of bench marks, Dobbs Ferry to Rensselaer (Greenbush).

L. S. 16.—Is 3.3 miles east of *Vischers Ferry, N. Y.*, in sixth course below coping in face of towpath abutment, near west angle of bridge No. 39. New York State B. M. No. 42, 1901. (See note 44, p. 584.)

L. S. 17.—Is 2.2 miles east of *Vischers Ferry, N. Y.*, in sixth course below coping near center of face of towpath abutment of bridge No. 43. New York State B. M. No. 45, 1901. (See note 44, p. 584.)

L. S. 18 = 12 (1875).—Is 1 mile east of *Vischers Ferry, N. Y.*, in fifth course of masonry below coping of bridge No. 46, at east angle of south abutment (bridge is second canal bridge below Lock No. 19). (See note 44, p. 584.)

L. S. 19.—Is at *Vischers Ferry, N. Y.*, on third course of masonry of east wing wall of towpath abutment of bridge No. 48. New York State B. M. No. 49, 1901. (See note 5, p. 580.)

L. S. 20.—Is at *Fondas Basin, N. Y.*, on top of coping at east end of east wing wall of towpath abutment of bridge No. 49, marked \oplus .

L. S. 21.—Is at *Rexford Flats, N. Y.*, on the northeast corner of coping of Lock No. 21, about 10 feet from end of anchor of southeast gate of south lock. New York State B. M. No. 52, 1901. (See note 5, p. 580.)

L. S. 22.—Is at *Rexford Flats, N. Y.*, on coping of Lock No. 22, between ends of anchor of northeast gate of north lock. New York State B. M. No. 53, 1901. (See note 5, p. 580.)

L. S. 23.—Is 1.8 miles west of *Rexford Flats, N. Y.*, in lower course in face of towpath abutment of bridge No. 52 near west angle. New York State B. M. No. 59, 1901. (See note 44, p. 584.)

L. S. 24.—Is 1.8 miles east of *Schenectady, N. Y.*, on second step at west end of towpath abutment of Delaware and Hudson Railroad bridge, marked \square B. M. New York State B. M. No. 61, 1901.

L. S. 25.—Is at *Schenectady, N. Y.*, on southwest corner of coping at west end of towpath abutment of swing bridge at Schenectady Locomotive Works. New York State B. M. No. 64, 1901. (See note 5, p. 580.)

L. S. 26.—Is at *Schenectady, N. Y.*, on first step of west wing wall of towpath abutment of Green street bridge over canal. New York State B. M. No. 66, 1901. (See note 5, p. 580.)

L. S. 27.—Is at *Schenectady, N. Y.*, on the southeast corner of foundation stone of the northeast column of Church street lift bridge. It is 0.9 foot from south edge of stone and 0.6 foot from the east edge. (See note 5, p. 580.)

L. S. 28.—Is 1.8 miles west of *Schenectady, N. Y.*, on northwest corner on top of north stone in third course of stones of the east abutment of bridge No. 63. Deep Waterways B. M., 1898. (See note 5, p. 580.)

L. S. 29.—Is 2.6 miles west of *Schenectady, N. Y.*, on northeast gate of north lock of lock 23. New York State B. M. No. 72, 1901. (See note 43, p. 584.)

L. S. 30.—Is 3.3 miles west of *Schenectady, N. Y.*; is a square cut on east corner of northeast end of shelf at lower end of lock No. 24, marked \square B. M. Deep Waterways B. M., 1898.

L. S. 31.—Is 5.6 miles west of *Schenectady, N. Y.*, on lower step of east wing wall of north abutment of bridge No. 67. (See note 5, p. 580.)

L. S. 32 = 19 (1875).—East of *Pattersonville, N. Y.* (See p. 849, App. 8, Report for 1899.) Marked \oplus .

L. S. 33.—Is 1.8 miles east of *Pattersonville, N. Y.*, at end of west wing wall of towpath abutment of bridge No. 71. New York State B. M. No. 83, 1901. (See note 43, p. 584.)

L. S. 34.—Is at *Pattersonville, N. Y.*, on bottom step east wing wall of north abutment of bridge No. 74. (See note 5, p. 580.)

L. S. 35.—Is 2.7 miles west of *Pattersonville, N. Y.*, on step of east wing wall of north abutment of bridge No. 75, $7\frac{1}{2}$ inches from west edge of stone and 6 inches from south edge. (See note 5, p. 580.)

L. S. 36.—Is 3.5 miles east of *Amsterdam, N. Y.*, on first stone under coping of east wing wall of towpath abutment of bridge No. 76. New York State B. M. No. 88. (See note 44, p. 584.)

L. S. 37 = 21 (1875).—Is 2.8 miles east of *Amsterdam, N. Y.* (See p. 849, App. 8, Report for 1899.) Marked \oplus .

L. S. 38.—Is 2.8 miles east of *Amsterdam, N. Y.*, on northeast gate of north lock of lock No. 26. New York State B. M. No. 90, 1901. (See note 43, p. 584.)

L. S. 39.—Is 2.5 miles east of *Amsterdam, N. Y.*, on coping of lock No. 27, between ends of anchor of northeast gate of north lock. New York State B. M. No. 91, 1901. (See note 5, p. 580.)

L. S. 40.—Is at *Amsterdam, N. Y.*, on top of lower step at west end of towpath abutment of bridge No. 78, marked \odot B. M. New York State B. M. No. 93, 1901.

L. S. 41.—Is at *Amsterdam, N. Y.*, on bottom step of west wing wall of towpath abutment of Market Street bridge, near center of south edge of step. (See note 5, p. 580.)

L. S. 42.—Is at *Amsterdam, N. Y.*, at center pier of Chuctanunda Creek culvert, towpath side. New York State B. M. No. 94, 1901. (See note 43, p. 584.)

L. S. 43 = 24a (1875).—Is 2.8 miles west of *Amsterdam, N. Y.* (See p. 850, App. 8, Report for 1899.)

L. S. 44.—Is 1 mile east of *Fort Hunter, N. Y.*, on coping of west wing wall of towpath abutment of bridge No. 80, first bridge east of lock No. 29. Deep Waterways B. M., 1898. (See note 5, p. 580.)

L. S. 45.—Is at *Fort Hunter, N. Y.*, on first stone east of junction of old wall and extension of north wall of south lock of lock No. 30. New York State B. M. No. 100a, 1901. (See note 5, p. 580.)

L. S. 46.—Is described by the Lake Survey as "2 miles east of *Fultonville, N. Y.*, on fourth course of stones below coping in face of abutment, near west angle of bridge No. 88, marked \odot B. M. New York State B. M. No. 109, 1901." The description of N. Y. 109 in the Report of the New York State Engineer for 1901, page 662, is the same as the above except the bench mark is said to be near east angle. The elevation of N. Y. 109 as determined from the New York Engineer's line would be 91^m .4700. (See note 44, p. 584.)

L. S. 47.—Is 1.4 miles east of *Fultonville, N. Y.*; is a point cut on the face of the most westerly stone, about 3 feet from the corner of the first course in the west wing wall of the north abutment of bridge No. 90, the third bridge east of Main Street Bridge and about 7 000 feet east of it. Deep Waterways B. M., 1898.

L. S. 48.—Is at *Fultonville, N. Y.*, on second step of east wing wall of berme abutment of Main Street bridge, bridge No. 93, marked \odot B. M. New York State B. M. No. 114, 1901.

L. S. 49.—Is 1.6 miles west of *Fultonville, N. Y.*, in fourth course of stones below coping in face of abutment, near east angle of bridge No. 96. New York State B. M. No. 117, 1901. (See note 44, p. 584.)

L. S. 50.—Is 3 miles west of *Fultonville, N. Y.*, a projecting point on the upper west corner on the face of the second stone from the west corner of the west wing wall of the north abutment of bridge No. 97, the first bridge crossing the Erie Canal east of the aqueduct, about 3 miles west of *Fultonville, N. Y.* Deep Waterways B. M., 1898. Marked \square B. M.

L. S. 51.—Is 3.2 miles west of *Fultonville, N. Y.*, at end of east wing wall of Tokkon Creek aqueduct, towpath side. New York State B. M. No. 120, 1901. (See note 43, p. 584.)

L. S. 52.—Is between *Downing* and *Sprakers, N. Y.*, on the coping at the northeast corner of the northwest wing wall of the north wall of the second Erie Canal aqueduct west of *Downing, N. Y.*, and about 2 miles west of the town. Deep Waterways B. M., 1898. (See note 5, p. 580.)

L. S. 53.—Is $2\frac{1}{4}$ miles east of *Sprakers, N. Y.*, and is a point on the face of the second stone from the east end in the first course of the east wing wall of the north abutment of the first bridge, No. 102, over the Erie Canal, east of Lock No. 31. Deep Waterways B. M., 1898. Marked \otimes B. M.

L. S. 54.—Is at *Sprakers, N. Y.*, on northeast gate of south lock of Lock No. 31. New York State B. M. No. 128, 1901. (See note 2, p. 584.) Marked B. M.

L. S. 55=29 (1875).—Is at *Sprakers, N. Y.*, and is the top of iron bolt in coping of west wing wall of towpath abutment of Ferry Street Bridge, No. 104. (See p. 850, App. 8, Report for 1899.)

L. S. 56.—Is at *Canajoharie, N. Y.*, on coping of parapet of northeast wing wall of *Canajoharie* Creek aqueduct, towpath side, marked B. M. \odot . New York State B. M. No. 135, 1901.

L. S. 57=31 (1875).—Is at *Canajoharie, N. Y.* Bench mark is in first stone of second course. (See p. 850, App. 8, Report for 1899.)

L. S. 58.—Is 2.4 miles east of *Fort Plain, N. Y.*, and is a point dressed square on the top of the east corner of the second course of masonry of the southeast wing wall of the northeast abutment of the first bridge, No. 113, east of the steel skew bridge of the West Shore Railroad at *Fort Plain, N. Y.* Deep Waterways B. M., 1898.

L. S. 59.—Is three-fourths of a mile east of *Fort Plain, N. Y.*, on northeast gate of north lock of Lock No. 32. New York State B. M. No. 141, 1901. (See note 42, p. 584.) Marked B. M.

L. S. 60.—Is at *Fort Plain, N. Y.*, at end of west wing wall of towpath abutment of bridge No. 117. New York State No. 142, 1901. (See note 43, p. 584.)

L. S. 61.—Is 0.7 mile west of *Fort Plain, N. Y.*, on second course above ground, near center of face of towpath abutment of West Shore Railroad bridge No. 278. New York State B. M. No. 144, 1901. (See note 44, p. 584.)

L. S. 62.—Is 1.5 miles east of *St. Johnsville, N. Y.*, on the south corner of the capstone of the southeast wing wall of the northeast abutment of the first bridge, No. 119, east of Lock No. 33. Deep Waterways B. M., 1898. (See note 5, p. 580.)

L. S. 63=34 (1875).—Is near *St. Johnsville, N. Y.*, west of Lock No. 33, on second course of masonry near center of east wing wall of towpath abutment of bridge No. 120. (See note 44, p. 584.)

L. S. 64.—Is at *St. Johnsville, N. Y.*, a square cut on top of second step of east wing wall of towpath abutment of bridge No. 121, marked B. M. New York State B. M. No. 153, 1901. (The elevation of N. Y. 153 as determined by the New York State Engineers differs 5 centimeters from the elevation of L. S. 64 from this line and is described in the New York State Engineer Report as "New B. M." L. S. 64 is therefore possibly identical with some older bench mark.)

L. S. 65.—Is about one-fourth mile west of *Mindenville, N. Y.*, on coping of Lock No. 34 between ends of anchor of northeast gate of north lock, marked □ B. M. New York State B. M. No. 155, 1901.

L. S. 66=35a (1875).—Is about 1 mile west of *Mindenville, N. Y.*, in the third bridge, No. 125, west of Lock No. 34. (See p. 850, App. 8, Report for 1899.) (See note 44, p. 584.)

L. S. 67.—Is at *Indian Castle, N. Y.*, on capstone of east wing wall of aqueduct No. 12, towpath side, marked □ B. M. Deep Waterways B. M., 1898.

L. S. 68.—Is 2.6 miles west of *Indian Castle, N. Y.*, on southeast corner of the capstone on the east end of the east wing wall of the north abutment of the bridge, No. 133, crossing the canal at a point about 600 feet north of the Herkimer Monument, Deep Waterways B. M., 1898. (See note 5, p. 580.)

L. S. 69=37 (1875).—Is at *Little Falls, N. Y.*, top of iron bolt between ends of anchor of northeast gate of north lock of Lock No. 36, marked ⊗.

L. S. 70.—Is at *Little Falls, N. Y.*, on coping of Lock No. 37, at ends of anchor of northeast gate of north lock, marked ○. New York State B. M. No. 170, 1901.

L. S. 71.—Is at *Little Falls, N. Y.*, on coping of Lock No. 38 between ends of anchor of northeast gate of north lock. New York State B. M. No. 171, 1901. (See note 5, p. 580.)

L. S. 72.—Is at *Little Falls, N. Y.*, on coping of Lock No. 39, at ends of anchor of northeast gate of north lock, marked ⊗. New York State B. M. No. 172, 1901.

L. S. 73=38a (1875).—Is 2.5 miles west of *Little Falls, N. Y.*, on first bridge, No. 138, east of Lock No. 40, marked with chisel. (See p. 851, App. 8, Report for 1899.)

L. S. 74.—Is 3 miles west of *Little Falls, N. Y.*, a cross cut on the top of the end bolt through the north branch of the iron collar of the northeast gate of the north lock of Lock No. 40. Deep Waterways B. M., 1898.

L. S. 75.—Is 5.7 miles west of *Little Falls, N. Y.*, on northeast gate of north lock of Lock No. 41. New York State B. M. No. 183, 1901. (See note 42, p. 584.)

L. S. 76=39a (1875).—Is 1 mile east *Herkimer, N. Y.*, on the coping of west wing wall of towpath abutment of bridge No. 143. (See note 5, p. 580.)

L. S. 77.—Is at *Herkimer, N. Y.*, on northeast corner of lower step of east wing wall of towpath abutment of bridge No. 144, Herkimer road bridge, marked ○. New York State B. M. No. 186, 1901.

L. S. 78.—Is at *Mohawk, N. Y.*, on projection of fourteenth stone from west end in second course of towpath abutment of West Shore Railroad bridge over the canal, marked ○. New York State B. M. No. 189, 1900.

L. S. 79.—Is one-half mile west of *Mohawk, N. Y.*, on coping of Lock No. 42, between ends of anchor of northeast gate of towpath lock. New York State B. M. No. 191, 1900. (See note 5, p. 580.)

L. S. 80.—Is three-fourths mile west of *Mohawk, N. Y.*, on northeast corner of towpath parapet wall of Fulmer Creek Aqueduct, marked with a cross in circle. New York State B. M. No. 193, 1900.

L. S. 81.—Is at *Ilion, N. Y.*, on southwest corner of west wing wall of towpath abutment of Typewriters bridge, marked ☐. New York State B. M. No. 195, 1900.

L. S. 82.—Is at *Ilion, N. Y.*, on west corner of coping of Steel Creek Aqueduct, towpath side, marked ⊗. New York State B. M. No. 197, 1900.

L. S. 83.—Is 1.1 miles west of *Ilion, N. Y.*, on coping between ends of anchor of northeast gate, towpath lock, Lock No. 44. New York State B. M. No. 200, 1900. (See note 5, p. 580.)

L. S. 84.—Is at *Frankfort, N. Y.*, on coping of towpath lock, towpath side, of Lock No. 45, 2 feet east of east hollow quoin, marked ⊗. New York State B. M. No. 204, 1900.

L. S. 85 = 41 (1875).—Is at *Frankfort, N. Y.* (See p. 851, App. 8, Report for 1899.) Marked ○.

L. S. 86.—Is 2.6 miles west of *Frankfort, N. Y.*, on southwest corner of lower step of west wing wall of north abutment of bridge No. 164. (See note 5, p. 580.)

L. S. 87.—Is 3.2 miles east of *Utica, N. Y.*, on southeast corner of coping stone on the extreme east end of parapet wall of Ferguson Creek Aqueduct, marked ○. New York State B. M. No. 215, 1900.

L. S. 88.—Is 2.1 miles east of *Utica, N. Y.*, top of copper plug in southeast corner of lower step of east wing wall of towpath abutment of Green's road bridge at Herkimer-Oneida County line. New York State B. M. No. 217, 1900.

L. S. 89.—Is at *Utica, N. Y.*, top of copper plug in southwest corner of west end of towpath abutment of Broad street lift bridge. New York State B. M. No. 219, 1900.

L. S. 90.—Is at *Utica, N. Y.*, top of copper plug in southwest corner of stone forming foundation of western stairway of Broadway street footbridge. New York State B. M. No. 221, 1900.

L. S. 91.—Is at *Utica, N. Y.*, top of copper plug in southwest corner of west end of towpath abutment of Whitesboro street lift bridge. New York State B. M. No. 222, 1900.

L. S. 92.—Is at *Utica, N. Y.*, copper plug between ends of anchor of northeast gate of towpath lock of lock No. 46. New York State B. M. No. 223, 1900.

L. S. 93.—Is 1.9 miles west of *Utica, N. Y.*, top of copper plug in lower step of east wing wall of towpath abutment of Whitesboro road bridge at west boundary of city of Utica. New York State B. M. No. 225, 1900.

L. S. 94.—Is at *Whitesboro, N. Y.*, top of copper plug in southeast corner of bottom step of east wing wall of towpath abutment of Clinton street bridge. New York State B. M. No. 228, 1900.

L. S. 95.—Is at *Whitesboro, N. Y.*, top of copper plug in bottom step of east wing wall of towpath abutment of Westmoreland street bridge. New York State B. M. No. 229, 1900.

L. S. 96.—Is 1.8 miles east of *Oriskany, N. Y.*, top of copper plug in southwest corner of bottom step of east wing wall of towpath abutment of Bradley's road bridge. New York State B. M. No. 230, 1900.

L. S. 97.—At *Oriskany, N. Y.*, top of copper plug in southwest corner of stone at west end of towpath coping of Oriskany aqueduct. New York State B. M. No. 232, 1900.

L. S. 98.—Is 1 mile west of *Oriskany, N. Y.*, top of copper plug in southwest corner of bottom step of west wing of towpath abutment of Brainard's farm bridge. New York State B. M. No. 233, 1900.

L. S. 99.—Is 4.2 miles west of *Oriskany, N. Y.*, top of copper plug on northwest corner of east stone of parapet of waste weir No. 2, just below bridge No. 31.

L. S. 100.—Is at *Stanwix, N. Y.*, top of copper plug in southeast corner of bottom step of east wing wall of towpath abutment of Stanwix road bridge. New York State B. M. No. 237, 1900.

L. S. 101.—Is at *Rome, N. Y.*, top of copper bolt in northeast corner of east wall of Black River feeder to Erie Canal, 100 feet west of center of Depeyster street bridge over canal. Whitesboro street crosses feeder by an arch marked S. W. Morton, contractor, 1851.

L. S. 102.—Is at *Rome, N. Y.*, square cut in the southwest corner of lower step at west end of north abutment of George street bridge, marked B. M. □.

L. S. 103.—Is 1.1 miles west of *Rome, N. Y.*, top of copper plug in bottom step of east wing wall of towpath abutment of Barnes's farm bridge. New York State B. M. No. 239, 1900.

L. S. 104.—Is 2.7 miles west of *Rome, N. Y.*, top of copper plug in southeast corner of end stone on west end of parapet of Fort Bull waste weir.

L. S. 105.—Is 4.8 miles west of *Rome, N. Y.*, top of copper plug in lower step of west wing wall of towpath abutment of Armstrong's farm bridge. New York State B. M. No. 241, 1900.

L. S. 106.—Is at *New London, N. Y.*, top of copper plug in bottom step of east wing wall of towpath abutment of New London road bridge. New York State B. M. No. 243, 1900.

L. S. 107.—Is at *Stacys Basin, N. Y.*, top of a copper plug in lower step of east wing wall of towpath abutment of bridge No. 49. New York State B. M. No. 245, 1901.

L. S. 108.—= 49 (1875).—Is at *Stacys Basin, N. Y.*, on bridge No. 49. (See p. 852, App. 8 of Report for 1899.)

L. S. 109.—= 51 (1875).—Is 1 mile east of *Higginsville, N. Y.*, on bridge No. 50. (See p. 852, App. 8, Report for 1899.)

L. S. 110.—Is at *Higginsville, N. Y.*, top of copper plug in second step of east wing wall of towpath abutment of east road bridge at Higginsville, bridge No. 51. New York State B. M. No. 247, 1901.

L. S. 111.—Is 2.4 miles west of *Higginsville, N. Y.*, nail in the root of a 2-foot maple tree on fence line on south side of road, the largest tree in the vicinity, about 2 000 feet west of intersection of roads about $2\frac{1}{2}$ miles west of Higginsville along old side cut to Oneida Lake.

L. S. 112.—Is at *Sylvan Junction, N. Y.*, square cut on top of east end of south abutment of New York, Ontario and Western Railroad bridge over Fish Creek at Sylvan Junction, N. Y. The letters U. S. B. M. are marked above the square.

L. S. 113.—Is at *North Bay, N. Y.*, nail in root on north side of a 14-inch maple tree in the northeast corner of Sautell's field, about 400 feet west of depot and about 60 feet south of New York, Ontario and Western Railroad track.

L. S. 114.—Is 1.7 miles west of *North Bay, N. Y.*, top of a three-eighths-inch brass bolt leaded vertically in a 1.2 by 1.2 by 0.5 foot triangular stone buried 2.7 feet below ground in the north side of the highway in front of the ruins of John Kinney's house. It is 70 feet northeast of northeast corner of barn on south side of road, 161 feet east of large willow tree; 104 feet east of fence opposite barn; 6.4 feet south of stone wall on north side of road; 12 feet south of most westerly tree in row of maple trees on north side of road, and 1.4 feet west of center of surface stone, which projects 4 inches above ground and whose dimensions are 2.6 by 1.2 by 0.6 feet. Surface stone is in line with western wall of foundation of burned house on the John Kinney farm. Surface stone marked U. S. B. M. N.

L. S. 115.—Is at *Cleveland, N. Y.*, top of a three-eighths-inch brass bolt leaded vertically in a 1.4 by 1.4 by 0.5 foot stone buried $2\frac{1}{2}$ feet below surface of ground at center of intersection of Bridge and North streets. It is 120 feet east of center of bridge over Black Creek; 37.5 feet north of fence on south side of Bridge street; 172 feet south of southwest corner of St. James Episcopal Church; 71.2 feet south of hydrant on west side of North street, and 1.6 feet west of surface stone marked U. S. B. M., which projects 2 inches above ground and whose dimensions are 2.2 feet by 1.0 by 0.5 foot.

L. S. 116.—Is at *Cleveland, N. Y.*, top of a copper nail in root of maple tree $2\frac{1}{2}$ feet in diameter, 100 feet west of second highway crossing the New York, Ontario and Western Railroad, west of railroad siding, and 540 feet west of milepost marked N. Y. 285. Deep Waterways B. M., 1898.

L. S. 117.—Is at *Bernhardt's Bay, N. Y.*, top of a three-eighths-inch brass bolt leaded vertically in a 1.2 by 0.8 by 0.5 footstone buried $2\frac{1}{2}$ feet under the surface of the ground on the north side of the road opposite J. Richardson's blacksmith shop. It is 26 feet west of east line of foundation of C. Winn's burned store; 15 feet north of center of road and opposite center of blacksmith shop; 148 feet east of center of bridge over small brook west of blacksmith shop; 25 feet southeast of southwest corner of ruins of C. Winn's store; 79 feet southwest of Sarah Jane Mickle's house on north side of road; 59 feet north of northeast corner of blacksmith shop, and 1.5 feet east of center of surface stone which projects 2 inches above ground, whose dimensions are 1.7 feet by 0.9 by 0.5 foot, marked U. S. B. M.

L. S. 118.—Is at *Constantia, N. Y.*, top of a three-eighths-inch brass bolt leaded vertically, 4.8 feet north of north rail of track, in corner of stone in coping at north end of west abutment of culvert No. 395, just east of New York, Ontario and Western depot, over second creek east of depot, marked

U. S. B. M.

R.

L. S. 119.—Is about one-half mile west of *Constantia, N. Y.*, top of a copper nail in root on south side of a chestnut tree two feet in diameter, 15 feet north of the north right-of-way line of the New York, Ontario and Western Railroad, and 305 feet east of highway crossing railroad about one-half mile west of depot. Deep Waterways B. M. 1898.

L. S. 120.—Is at *West Monroe, N. Y.*, top of a 30d. spike in root on south side of third elm tree, the third from cross road to depot, in a row of four large elm trees on the south side of the main road opposite Cross and Wrightman's store.

L. S. 121.—Is at *Central Square, N. Y.*, a square cut on the northwest corner of doorstep of door of Low's store, facing band stand, marked with the letters U. S. B. M. above the square.

L. S. 122.—Is about one-fourth mile west of depot at *Caughdenoy, N. Y.*, a square cut on coping on north side of east abutment of New York, Ontario and Western Railroad bridge No. 420, first railroad bridge west of Caughdenoy depot. It is 0.8 foot east of west face of abutment, 1 foot west of step, and 4.8 feet north of north rail of track, marked U. S. B. M. above the square.

L. S. 123.—Is at *Pennellville, N. Y.*, top of a three-eighths-inch brass bolt leaded vertically in a 1.5 by 1.5 by 0.6 foot stone buried $2\frac{1}{2}$ feet under surface of ground in west side of school yard, 57.8 feet from northwest corner of schoolhouse, 67.4 feet northwest from southwest corner of schoolhouse, 111.8 feet north of the northwest corner of Methodist Church, in line with the north face of schoolhouse, and 1.7 feet west of a 0.6 by 0.9 by 2.5 foot surface stone which is 34.6 feet east of center of road on west side of schoolhouse and 119.3 feet south of center of road on north side of schoolhouse; it projects 4 inches above ground and is marked

U S B M
W

L. S. 124.—Is 2.8 miles southeast of *Fulton, N. Y.*, center of a one-fourth-inch brass bolt leaded horizontally in a brick in the west face near the northwest corner of W. M. Whalin's brick house, on south side of Pennellville-Fulton road. Bolt is 2.45 feet from northwest corner of house and 3.9 feet above ground, marked U. S. B. M.

L. S. 125.—Is at *Fulton, N. Y.*, on east leaf of north gate of Lock No. 8, Oswego Canal. (See note 45, p. 584.)

L. S. 126.—Is at *Fulton, N. Y.*, on east leaf of north gate of Lock No. 10, Oswego Canal. (See note 45, p. 584.)

L. S. 127.—Is at *Fulton, N. Y.*, top of a copper plug in coping of south wing wall of towpath abutment of first bridge below Lock No. 10.

L. S. 128.—Is at *Fulton, N. Y.*, top of a copper plug, flush with the masonry, in first step of south wing wall of east abutment of highway bridge over Oswego Canal on North First street. New York State B. M. No. 19, 1901.

L. S. 129.—Is 0.6 mile north of *Fulton, N. Y.*, on east leaf of middle gate of Lock No. 11. (See note 45, p. 584.)

L. S. 130.—Is 1.6 miles north of *Fulton, N. Y.*, on east leaf of middle gate of Lock No. 12. (See note 45, p. 584.)

L. S. 131.—Is at *Minetto, N. Y.*, flush with masonry, between anchor irons on northeast lower hollow quoin stone of Lock No. 13. New York State B. M. No. 21, 1901.

L. S. 132.—Is 0.6 mile north of *Minetto, N. Y.*, top of copper plug, flush with masonry, between anchor irons of east leaf of north gate of Lock No. 14.

L. S. 133.—Is 2.8 miles south of *Oswego, N. Y.*, top of a copper plug, flush with masonry, between anchor irons on northeast lower hollow quoin stone of Lock No. 15. New York State B. M. No. 22.

L. S. 134.—Is 0.6 mile south of *Oswego, N. Y.*, on east leaf of north gate of Guard Lock No. 5. (See note 45, p. 584.)

L. S. 135.—Is 0.3 mile south of *Oswego, N. Y.*, on east leaf of north gate of Lock No. 17. (See note 45, p. 584.)

L. S. 136.—Is at *Oswego, N. Y.*, top of a three-eighths inch brass bolt leaded vertically in coping between anchor irons of east leaf of middle gate of Lock No. 18.

L. S. 137.—Is at *Oswego, N. Y.*, center of a three-eighths inch brass bolt leaded horizontally in water table under chimney at northwest corner of Northwestern Elevator, at the foot of Schuyler street. Bolt is on the north face, 8.9 feet east of northwest corner, marked

U S B M

o

3

L. S. 138.—Is at *Oswego, N. Y.*, a circle 2 centimeters in diameter cut on the highest point of the large boulder marking the site of Fort Oswego, at the foot of West First street. Circle is 7.3 feet from southeast post of iron fence around the boulder and 7.17 feet from the southwest post.

L. S. 139.—Is at *Oswego, N. Y.*, is the top of a three-eighths-inch brass bolt leaded vertically in top of masonry of old Government pier at the foot of West Third street. It is 68.9 feet north of old U. S. L. S. B. M. "A" 1875, 72.4 feet north of dock running east, 0.6 foot from face of dock, 86 feet south of rear face of dock running east toward lighthouse, 35.2 feet northeast of bottom step of elevated portion of dock, marked

U S B M

□

No. 1

A.—Is at *Oswego, N. Y.*, top of an iron bolt in top of masonry of old Government pier at foot of West Third street, 0.5 foot from east face of masonry, 3.5 feet north of north face of wooden dock leading to Government boathouse. Bolt is sunk one-half inch below top of masonry, marked

U S

+

M

United States Lake Survey B. M., 1875.

B.—Is at *Oswego, N. Y.*, top of stone post in prolongation south of west face of stone pier at the foot of West Third street, 8 feet south of masonry of pier. Top of post is flush with the ground and is at one of the southwest corners of the Government reservation. United States Lake Survey B. M., 1875.

C.—Is at *Oswego, N. Y.*, a cross cut on shop of dry dock of marine railroad at foot of West Second street. Cross is in third course of stones from ground on west side of shop and 3 feet north of southwest corner. United States Lake Survey B. M. 1875.

DESCRIPTIONS OF PERMANENT BENCH MARKS FROM RENSSELAER (GREENBUSH) TO
OSWEGO, N. Y.

(See Report of Board on Deep Waterways, 1900, Part II, pp. 1017-1023.)

Gristmill.—Is at *Rensselaer (Greenbush), Rensselaer County, N. Y.* (See p. 848, App. 8, Report for 1899.) See also descriptions of bench marks, Dobbs Ferry to Rensselaer (Greenbush).

D. W. Rensselaer = L. S. 3.—Is at *Rensselaer, Rensselaer County, N. Y.*, and is a cross cut in stone on southwest corner of foundation of water tank at the south end of viaduct on which Broadway, Rensselaer, crosses the New York Central and Hudson River Railroad. (See p. 661.)

D. W. Bath.—Is near *Bath, Rensselaer County, N. Y.*, and is center of square cut in top stone at the northeast corner of stone culvert under the New York Central and Hudson River Railroad, about 1 000 feet north of Bath Dyke Light.

D. W. Troy 3.—Is near *Troy, Rensselaer County, N. Y.*, and is a cross cut in top stone of northwest corner of culvert under the New York Central and Hudson River Railroad, about 300 feet north of Covills Folly Light.

D. W. Troy 2.—Is at *Troy, Rensselaer County, N. Y.* See descriptions of bench marks, Rensselaer (Greenbush) to Troy.

N. Y. 12.—Is at *West Troy, Albany County, N. Y.*, on second stone of second course in the northeast corner of the west abutment of Congress Street Bridge and is a cross marked "B. M." (See note 41, p. 584.)

8a (1875) = L. S. 11.—Is at *Cohoes, N. Y.* (See p. 848, App. 8, Report for 1899.)

D. W. Cohoes 2.—Is at *Cohoes, Albany County, N. Y.*, and is a square cut on south corner of doorsill of house at No. 1 Mohawk street.

D. W. Cohoes 3.—Is at *Cohoes, Albany County, N. Y.*, and is a crow foot on the northeast corner of retaining wall on the east bank of the hydraulic canal and on the west end of Cohoes Falls.

N. Y. 33.—Is near *Cohoes, Albany County, N. Y.*, in the southwest corner of the top stone on the south end of the breakwater above the Cohoes Water Company's gate-house and near the western end of this company's dam, and is "a square" (D. W.), or "an arrow" (N. Y.). (See note 41, p. 584.)

9a (1875).—Is near *Cohoes, N. Y.* (See p. 848, App. 8, Report for 1899.)

D. W. Crescent.—Is near *Crescent, Albany County, N. Y.*, and is a cross in circle cut in south corner of coping stone on south wing of northeast abutment of second bridge over the Erie Canal south of the Lower Mohawk aqueduct and about 3 200 feet south of the southern end of this aqueduct.

N. W. 36 = L. S. 14.—Is at *Crescent, Albany County, N. Y.* (See p. 661.)

D. W. Dunsbach.—Is at *Dunsbach Ferry, Albany County, N. Y.*, on the southeast corner of bottom stone of doorstep on south side of house, about 200 feet south of south end of bridge over the Mohawk River.

D. W. Niskayuna.—Is at *Niskayuna, Albany County, N. Y.*, and is a cross cut on corner of top stone of foundation on the southwest corner of the depot of Troy and Schenectady Branch of New York Central and Hudson River Railroad.

D. W. Vischers.—Is near *Vischers Ferry, Saratoga County, N. Y.*, on north corner of north stone of northeast end of culvert No. 37, on Troy and Schenectady Branch of New York Central and Hudson River Railroad and about 1 mile west of Vischers Ferry.

D. W. Aqueduct 1.—Is near *Aqueduct Station, Schenectady County, N. Y.*, and is a cross cut in southeast corner of capstone of culvert No. 40 on the Troy and Schenectady Branch of the New York Central and Hudson River Railroad, about 6 000 feet east of railroad station.

N. Y. 57.—Is at *Aqueduct Station, Schenectady County, N. Y.*, and is a square cut in extreme west corner of step under ladies' entrance to the railroad station of the Troy

and Schenectady Branch of the New York Central and Hudson River Railroad. (See note 41, p. 584.)

D. W. Aqueduct 3.—Is near *Aqueduct Station, Schenectady County, N. Y.*, about 3 000 feet west of railroad station, and is the extreme southeast corner of top of key-stone of bridge No. 44 of the Troy and Schenectady Branch of the New York Central and Hudson River Railroad.

N. Y. 65.—Is at *Schenectady, Schenectady County, N. Y.*, opposite the Schenectady Locomotive Works, and about 400 feet east of Romeyn Street crossing, and is a square cut on the southwest end of the top of the southwest coping stone of culvert No. 47 of the Troy and Schenectady Branch of the New York Central and Hudson River Railroad. (See note 41, p. 584.)

N. Y. 67.—Is at *Schenectady, Schenectady County, N. Y.*, on the southeast corner of the foundation stone of the northwest column of the Church Street lift bridge over the Erie Canal, and is a "cross" (D. W.), or a "square" (N. Y.). (See note 41, p. 584.)

N. Y. 71=L. S. 28.—Is near *Schenectady, Schenectady County, N. Y.* (See p. 662.)

N. Y. 74=L. S. 30.—Is between *Schenectady and Rotterdam Junction, N. Y.* (See p. 662.)

N. Y. 76a.—Is about 2 miles east of *Rotterdam Junction, Schenectady County, N. Y.*, and is a square cut on the north corner of the bottom stone step at the east corner of brick house, "Van Slyck homestead" (N. Y.), at bridge No. 66, 700 feet east of the Erie Canal aqueduct over Flat Stone Creek. (See note 41, p. 584.)

D. W. Rotterdam 1.—Is at *Rotterdam Junction, Schenectady County, N. Y.*, and is an arrow cut on the north corner of projecting course of brick on the north corner of brick house, about 700 feet east of Lock No. 25 of the Erie Canal and about 150 feet south of the schoolhouse.

D. W. Rotterdam 2.—Is between *Rotterdam Junction and Pattersonville, Schenectady County, N. Y.*, and is a square cut in the coping stone west of the center and on the north edge of coping on the north end of culvert under highway, about 1 600 feet east of railroad bridge over the Mohawk River, which is about 1 mile east of Pattersonville, N. Y.

D. W. Pattersonville.—Is at *Pattersonville, Schenectady County, N. Y.*, and is a square cut on northeast corner of large square stone under foot of flight of steps on southwest corner of coal shed, opposite Pattersonville Hotel, and about 300 feet east of West Shore Railroad station.

21 (1875)=N. Y. 89=L. S. 37.—Is near *Amsterdam, Montgomery County, N. Y.* (See p. 663.)

D. W. Amsterdam 1.—Is near *Amsterdam, Montgomery County, N. Y.*, and is a square cut on the northeast corner of the west abutment of bridge No. 238 of the West Shore Railroad, about 9 000 feet east of bridge over the Mohawk River at Amsterdam, N. Y.

D. W. Amsterdam 2.—Is at *Amsterdam, Montgomery County, N. Y.*, and is a square cut in the top of the north corner of the northwest abutment of bridge No. 242 of the West Shore Railroad, crossing Chuctenunda Creek.

D. W. Akin=L. S. 43.—Is near *Amsterdam, Montgomery County, N. Y.* (See p. 663.)

N. Y. 97=L. S. 44.—Is near *Fort Hunter, Montgomery County, N. Y.* (See p. 663.)

N. Y. 101.—Is at *Fort Hunter, Montgomery County, N. Y.*, on the Erie Canal aqueduct over Schoharie Creek and is a square cut "on lower course of the extreme SW. corner of the NW. side" (D. W.), or, "at the foot of the parapet on end of west wing, towpath side, and marked B. M." (N. Y.). "Canal B. M. 140" (N. Y.) (See note 41, p. 584.)

N. Y. 106.—Is about 2 000 feet west of the West Shore Railroad station at *Auriesville, Montgomery County, N. Y.*, and is a square cut on the west end of the west wing of the wall of the north abutment of bridge No. 85 over the Erie Canal. (See note 41, p. 584.)

D. W. *Fultonville*=L. S. 47.—Is near *Fultonville, Montgomery County, N. Y.* (See p. 663.)

N. Y. 115.—Is at *Fultonville, Montgomery County, N. Y.*, and is a point cut on the top of the projection of the fourth stone of the second course in the west end of the towpath abutment of "Bridge No. 94" (N. Y.) "the first bridge over the Erie Canal west of Main street bridge" (D. W.). "Marked \square B. M." (N. Y.). (See note 41, p. 584.)

D. W. *Yatesville*=L. S. 50.—Is between *Fultonville* and *Yatesville, Montgomery County, N. Y.* (See p. 664.)

N. Y. 121.—Is on "bridge No. 98" (N. Y.), "the first bridge over the Erie Canal east of *Downing, Montgomery County, N. Y.*" (D. W.) "at the angle of the east wing wall with the face of the north abutment" (D. W.) and is "the top of small projection on the first course of masonry" (D. W.), or "on projection of fourth stone below coping on face of towpath abutment marked \otimes B. M." (N. Y.), "Canal B. M. 154" (N. Y.). (See note 41, p. 584.)

N. Y. 124.—Is near *Downing, Montgomery County, N. Y.*, "about 3 300 feet west of the station of the West Shore Railroad," (D. W.) on the towpath side of the Erie Canal aqueduct over Leonardsons Creek, on the top of the coping of the southeast corner of the west wing, and is a square, "marked B. M." (N. Y.). (See note 41, p. 584.)

D. W. *Downing 3*=L. S. 52.—Is between *Downing* and *Sprakers, Montgomery County, N. Y.* (See p. 664.)

D. W. *Sprakers*=L. S. 53.—Is near *Sprakers, Montgomery County, N. Y.* (See p. 664.)

N. Y. 131.—Is about 1 mile from *Sprakers, Montgomery County, N. Y.*, "on bridge No. 106" (N. Y.), "the third bridge over the Erie Canal west of the Erie Canal Aqueduct at *Sprakers*" (D. W.) on projection of bottom course first stone from east end of east wing "towpath side" (N. Y.) "on the middle of the face" (D. W.) of the first stone from the east end and is "a square" (D. W.), or, is "marked \otimes B. M." (N. Y.). (See note 41, p. 584.)

31 (1875)=L. S. 57.—Is at *Canajoharie, Montgomery County, N. Y.* (See p. 664.)

D. W. *Fort Plain*=L. S. 58.—Is near *Fort Plain, Montgomery County, N. Y.* (See p. 664.)

N. Y. 142a.—Is at *Fort Plain, Montgomery County, N. Y.*, on "the first bridge over the Erie Canal west of the River Street bridge" (D. W.), or, "the first bridge east of *Fort Plain*," (N. Y.) "at the end of the southeast wing of the northeast abutment" (D. W.), or "on coping of the east wing towpath abutment" (N. Y.) "on the

extreme south corner of the southeast capstone" (D. W.), and "is a square." (N. Y.) (See note 41, p. 584.)

D. W. St. Johnsville=L. S. 62.—Is near *St. Johnsville, Montgomery County, N. Y.* (See p. 664.)

D. W. St. Johnsville=L. S. 63.—Is near *St. Johnsville, Montgomery County, N. Y.* (See p. 664.)

N. Y. 154.—Is at *Mindenville, Montgomery County, N. Y.*, on "bridge No. 122" (N. Y.), "the first bridge crossing the Erie Canal east of Lock No. 34" (D. W.) on southeast corner of bottom step of the east wing wall of north abutment, "marked □ B. M." (N. Y.). (See note 41, p. 584.)

35a (1875)=L. S. 66.—Is near *Mindenville, Montgomery County, N. Y.* (See p. 665.)

N. Y. 160.—Is between *Mindenville*, and *Indian Castle, Herkimer County, N. Y.*, on "bridge No. 127" (N. Y.), "the bridge crossing the Erie Canal opposite the entrance of the East Canada Creek to the Mohawk River" (D. W.) "on the southeast wing wall of the northeast abutment" (D. W.), or, "east wing rear of towpath abutment" (N. Y.) and is a square on the east corner or the end stone in the third course "marked B. M." (N. Y.). (See note 41, p. 584.)

D. W. Indian Castle.=L. S. 67.—Is at *Indian Castle, Herkimer County, N. Y.* (See p. 665.)

L. S. 68.—Between *Indian Castle* and *Little Falls, Herkimer County, N. Y.* (See p. 665.)

37 (1875)=L. S. 69.—Is at *Little Falls, Herkimer County, N. Y.* (See p. 665.)

N. Y. 173.—Is at *Little Falls, Herkimer County, N. Y.* (on the Bellinger Street bridge, "on the southwest wing of the northwest abutment" (D. W.), or, the "west wing of the towpath abutment" (N. Y.), "on the top of the coping" (N. Y.), or "on south corner of capstone on the southwest end" (D. W.), and is a square "marked with a chisel" (N. Y.). (See note 41, p. 584.)

N. Y. 175.—Is near *Little Falls, Herkimer County, N. Y.*, on "bridge No. 137" (N. Y.), "the second bridge crossing the Erie Canal west of Bellinger Street bridge" (D. W.) on the east wing of the north or towpath abutment "on the top of the coping" (N. Y.), or "on the southeast corner of capstone on the east end, and is a circle" (D. W.), or is "marked ⊗, with a chisel" (N. Y.), "Canal B. M. No. 204" (N. Y.). (See note 41, p. 584.)

38a (1875)=L. S. 73.—Is between *Little Falls*, and *Herkimer, Herkimer County, N. Y.* (See p. 665.)

L. S. 74.—Is between *Little Falls* and *Herkimer, Herkimer County, N. Y.* (See p. 665.)

N. Y. 182.—Is near *Herkimer, Herkimer County, N. Y.*, on the southeast corner of capstone on the east end of the east wing wall of the north or towpath abutment, on the second bridge east of lock No. 41, and is a square marked with a chisel. (See note 41, p. 584.)

N. Y. 187.—Is at *Herkimer, Herkimer County, N. Y.*, on the north abutment "of the First Street bridge" (D. W.), or, "of Mohawk River bridge, Washington Street" (N. Y.), on the top of the masonry near the northeast corner, marked by a cross cut in a circle and the letters U. S. D. W. B. M. (See note 41, p. 584.)

D. W. Ilion.—Is at *Ilion, Herkimer County, N. Y.*, and is top of covering stone of masonry of northwest corner of culvert at southwest wing wall of the south highway bridge over the Mohawk River.

D. W. Frankfort 1.—Is at *Frankfort, Herkimer County, N. Y.*, and is top of the northwest corner of water table of pilaster, at West Shore Railroad roundhouse.

N. Y. 203 = L. S. 85.—Is at *Frankfort, Herkimer County, N. Y.* (See p. 666.)

D. W. Frankfort 3.—Is between *Utica and Frankfort, Herkimer County, N. Y.*, and is a copper nail in root of wild-cherry tree about 500 feet southeast of milepost 209 from Buffalo, on New York Central and Hudson River Railroad.

D. W. Utica 1.—Is between *Utica and Frankfort, Herkimer County, N. Y.*, and is a copper nail in root of tree about 50 feet north of north rail of the New York Central and Hudson River Railroad, and 200 feet east of culvert No. 496.

D. W. Utica 2.—Is near *Utica, Oneida County, N. Y.*, and is a copper nail in root of elm tree about 50 feet north of north bank of Mohawk River, and about 830 feet northeast from north end of railroad bridge over Mohawk River, on the Black River branch of the New York Central and Hudson River Railroad.

N. Y. 232 = L. S. 97.—Is at *Oriskany, Oneida County, N. Y.* (See p. 667.)

D. W. Oriskany 2.—Is between *Rome and Oriskany, Oneida County, N. Y.*, and is the top of the southwest corner of the stone foundation of milepost 246 from New York and 194 from Buffalo, on the New York Central and Hudson River Railroad, about $1\frac{3}{4}$ miles west of Oriskany Station.

D. W. Rome 1.—Is between *Rome and Oriskany, Oneida County, N. Y.*, and is the top of southwest corner of the east abutment of bridge No. 538 of the New York Central and Hudson River Railroad; point on masonry above bridge seat, about 1 foot below top of rail, and 5 feet south of south rail.

D. W. Rome 2.—Is at *Rome, Oneida County, N. Y.*, and is a copper nail in root of elm tree about 20 feet east of east line of Lawrence street, and about 900 feet north, measured along street from center of bridge crossing the old Erie Canal.

D. W. Rome 3.—Is at *Rome, Oneida County, N. Y.*, and is the top of the southeast corner of the masonry, about 1 foot below top of rail of bridge of the Rome, Watertown and Ogdensburg Railroad crossing highway about 1 mile west of Rome, N. Y., near the beet sugar company's buildings.

D. W. Rome 4.—Is between *New London and Rome, Oneida County, N. Y.*, and is a copper nail in root of elm tree on the south side of the angle in the highway, and about 550 feet east, measured along the highway from the east side of the house of Mark Thron.

D. W. New London.—Is at *New London, Oneida County, N. Y.*, and is a copper nail in root of large elm tree in highway; about 75 feet south of the intersection of highways, also about 1 050 feet south of highway bridge crossing Wood Creek.

D. W. Sylvan Beach 1.—Is between *Sylvan Beach and New London, Oneida county, N. Y.*, and is a copper nail in south root of small tree in south corner of woods on the property of W. Warner, about 800 feet east of Drum Creek and about 500 feet west of east line of the W. Warner property.

D. W. Sylvan Beach 2.—Is near *Sylvan Beach, Oneida County, N. Y.*, and is a copper nail in root of tree about 10 feet east of east right-of-way line of the New York, Ontario and Western Railroad, and about 1 030 feet southwest, measured along

the railroad, from the south end of the railroad bridge crossing Fish Creek, about one-half mile east of Sylvan Beach, N. Y.

D. W. North Bay.—Is near *North Bay, Oneida County, N. Y.*, and is a copper nail in root of oak tree 2 feet in diameter, $12\frac{1}{2}$ feet north of north right-of-way line of New York, Ontario and Western Railroad and 1 185 feet east of milepost marked "279."

L. S. 116.—Is at *Cleveland, Oswego County, N. Y.* (See p. 668.)

L. S. 119.—Is near *Constantia, Oswego County, N. Y.* (See p. 668.)

D. W. Brewerton.—Is at *Brewerton, Oswego County, N. Y.*, and is a copper nail in root of elm tree on the north bank of the Oneida River about one-half mile east of the highway bridge and about 150 feet southeast of the house of Doctor Oberlander.

D. W. High Banks.—Is near "*High Banks*," south of *Caughdenoy, Oswego County, N. Y.*, and is a copper nail in root of elm tree on east bank of the Oneida River and on the west side of the highway about 850 feet northerly, measured on highway, from wooden bridge over Black Creek.

D. W. Sand Ridge.—Is on *Sand Ridge, Oswego County, N. Y.*, and is a copper nail in root of elm tree on property line between J. Ray and C. Breshnahan and about 1 000 feet westerly of highway, measured along property line.

D. W. Ingalls 1.—Is between *Ingalls Crossing* and *Sand Ridge, Oswego County, N. Y.*, and is top of masonry of northwest corner of south abutment of highway bridge crossing Bell Creek about 250 feet southeast of house of G. Hollenbeck.

D. W. Ingalls 2.—Is near *Ingalls Crossing, Oswego County, N. Y.*, and is a copper nail in root of tree about 20 feet north of north right-of-way line of New York, Ontario and Western Railroad and about 20 feet west of line fence between Chapman estate and A. Wolever; also about 3 400 feet west of west head block of siding at Ingalls Crossing.

D. W. Phoenix.—Is at *Phoenix, Oswego County, N. Y.*, and is a copper nail in root of oak tree located 750 feet southwest in the direction of highway from the intersection of highways about 200 feet east of bridge over Brandy Brook and about 150 feet southeast, at right angles to highway, from this highway; also about 450 feet north of north edge of Oswego Canal.

D. W. Hinmanville 1.—Is at *Hinmanville, Oswego County, N. Y.*, and is a copper bolt, flush with masonry, between anchors on lower hollow quoin (towpath side) of Lock No. 6, Oswego Canal.

D. W. Hinmanville 2.—Is between *Fulton* and *Hinmanville, N. Y.*, and is a copper bolt, flush with masonry, between anchors on middle hollow quoin (towpath side) of Lock No. 7, Oswego Canal.

L. S. 128.—Is at *Fulton, Oswego County, N. Y.* (See p. 669.)

D. W. Fulton 2.—Is between *Minetto* and *Fulton, N. Y.*, and is a copper bolt, flush with masonry, between anchors in middle hollow quoin (towpath side) of Guard Lock No. 4, Oswego Canal.

L. S. 131.—Is at *Minetto, N. Y.* (See p. 669.)

L. S. 133.—Is between *Oswego* and *Minetto, N. Y.* (See p. 669.)

A.—Is at *Oswego County, N. Y.* (See p. 670.)

DESCRIPTION OF PERMANENT BENCH MARKS BETWEEN ALBANY AND BUFFALO, N. Y.

[The originals of these descriptions may be found in the Report of the State Engineer and Surveyor of New York for 1901, pp. 657-707.]

N. Y. 1.—Is at *Albany, Albany County, N. Y.*, and is a cross cut in iron bolt, northeast corner north coping stone, west abutment Island bridge, foot of State street.

N. Y. 2.—Is at *Albany, Albany County, N. Y.*, Government building, foot of State street, lower basement window sill, east end State street side, marked cross in circle.

N. Y. 3.—Is at *Albany, Albany County, N. Y.*, State hall. Destroyed.

N. Y. 4.—Is at *Albany, Albany County, N. Y.*, on shelf, at lower end of pier between locks at Lock No. 1, marked cross in circle with chisel. (Canal B. M. No. 1.)

N. Y. 4a = L. S. 5.—Is at *Albany, Albany County, N. Y.* (See p. 661.)

N. Y. 5 = L. S. 6.—Is at *Albany, Albany County, N. Y.* (See p. 661.)

N. Y. 5a.—Is near *Albany, Albany County, N. Y.*, on the north end towpath parapet of culvert, marked cross in circle with chisel, east of bridge No. 6. (Canal B. M. No. 8.)

N. Y. 6 = L. S. 7.—Is near *Albany, Albany County, N. Y.* (See p. 661.)

N. Y. 7 = L. S. 8.—Is at *Watervliet, Albany County, N. Y.* (See p. 661.)

N. Y. 8.—Is at *Watervliet, Albany County, N. Y.*, bridge No. 12, northeast corner north wing of towpath abutment, on coping; marked cross in circle with chisel. (Canal B. M. No. 14.)

N. Y. 9.—Is at *Watervliet, Albany County, N. Y.*, on coping of lock at "lower side cut," at anchor of northwest gate, marked cross in circle with chisel. (Canal B. M. No. 15.)

N. Y. 10.—Is at *Watervliet, Albany County, N. Y.*, on towpath abutment of old arsenal bridge, at north angle of main wall, top of lower course, marked cross in circle, and above, B. M., with chisel. (Canal B. M. No. 16.)

N. Y. 11.—Is at *Watervliet, Albany County, N. Y.*, and is a square cut near northeast corner of foundation stone, south of main tower, towpath end of lift bridge, Congress street.

N. Y. 12.—Is a Deep Waterways bench mark at *West Troy, Albany County, N. Y.* (See p. 671.)

N. Y. 13.—Is at *Troy, Albany County, N. Y.*, and is on coping of north wall of north lock of "upper side cut," northwest corner of west stone, marked cross in circle with chisel. (Canal B. M. No. 18.)

N. Y. 14.—Is near *Green Island, Albany County, N. Y.*, on coping of Lock No. 3, between ends of anchor, southwest gate of west lock, marked cross in circle with chisel. (Canal B. M. No. 21.)

N. Y. 15.—Is near *Green Island, Albany County, N. Y.*, on coping of Lock No. 4, between ends of anchor, southwest gate of west lock, marked cross in circle with chisel. (Canal B. M. No. 23.)

N. Y. 16.—Is near *Cohoes, Albany County, N. Y.*, on coping of Lock No. 5, between ends of anchor, southwest gate of west lock, marked cross in circle with chisel. (Canal B. M. No. 25.)

N. Y. 17.—Is near *Cohoes, Albany County, N. Y.*, on coping of Lock No. 6, between ends of anchor, southwest gate of west lock, marked cross in circle with chisel. (Canal B. M. No. 27.)

N. Y. 18.—Is near *Cohoes, Albany County, N. Y.*, on coping of Lock No. 7, between ends of anchor, southeast gate of east lock, marked \square with chisel. (Canal B. M. No. 29.)

N. Y. 19.—Is near *Cohoes, Albany County, N. Y.*, on coping of Lock No. 8, between ends of anchor, southwest gate of west lock, marked cross in circle with chisel. (Canal B. M. No. 31.)

N. Y. 20.—Is near *Cohoes, Albany County, N. Y.*, on coping of Lock No. 9, between ends of anchor, southeast gate of east lock, marked cross in circle with chisel. (Canal B. M. No. 33.)

N. Y. 21.—Is near *Cohoes, Albany County, N. Y.*, and is \square cut on coping of Lock No. 10, between ends of anchor, southwest gate of west lock. (Canal B. M. No. 35.)

N. Y. 22.—Is near *Cohoes, Albany County, N. Y.*, on coping of Lock No. 11, between ends of anchor, southwest gate of west lock, marked cross in circle with chisel. (Canal B. M. No. 37.)

N. Y. 23.—Is near *Cohoes, Albany County, N. Y.*, on coping of Lock No. 12, between ends of anchor, southwest gate of west lock, marked cross in circle with chisel. (Canal B. M. No. 39.)

N. Y. 24.—Is at *Cohoes, Albany County, N. Y.*, on coping of Lock No. 13, between ends of anchor, southeast gate of east lock, marked cross in circle with chisel. (Canal B. M. No. 41.)

N. Y. 25.—Is at *Cohoes, Albany County, N. Y.*, on coping of Lock No. 14, between ends of anchor, southeast gate of east lock, marked cross in circle with chisel. (Canal B. M. No. 43.)

N. Y. 26=L. S. 11.—Is at *Cohoes, Albany County, N. Y.* (See p. 661.)

N. Y. 27.—Is at *Cohoes, Albany County, N. Y.*, on coping of Lock No. 15, between ends of anchor, southeast gate of east lock, marked cross in circle with chisel. (Canal B. M. No. 45.)

N. Y. 28.—Is at *Cohoes, Albany County, N. Y.*, on coping of Lock No. 16, between ends of anchor, southeast gate of east lock, marked cross in circle with chisel. (Canal B. M. No. 47.)

N. Y. 29.—Is at *Cohoes, Albany County, N. Y.*, and is bolt head in coping of Lock No. 17, between ends of anchor, southwest gate of west lock, marked + with chisel.

N. Y. 30=L. S. 12.—Is at *Cohoes, Albany County, N. Y.*, on coping of Lock No. 18, between ends of anchor, southwest gate of west lock, marked cross in circle with chisel. (Canal B. M. No. 51.)

N. Y. 31.—Is near *Cohoes, Albany County, N. Y.*, and is a square cut on coping, east end of south side wall of wasteweer No. 5, just north of bridge No. 30. (Canal B. M. destroyed.)

N. Y. 32.—Is near *Cohoes, Albany County, N. Y.*, and is point cut in square \square on northeast corner lower step, north end of berme abutment bridge No. 31; new bench mark.

N. Y. 33.—Is a Deep Waterways bench mark near *Cohoes, Albany County, N. Y.* (See p. 671.)

N. Y. 35=L. S. 13.—Is near *Cohoes, Albany County, N. Y.* (See p. 661.)

N. Y. 36=L. S. 14.—Is at *Crescent, N. Y.* (See p. 661.)

N. Y. 37.—Is at *Crescent, Albany County, N. Y.*, on top of coping, northwest corner, southeast wing of aqueduct at Crescent, marked cross in circle with chisel. Canal B. M. No. 60.

N. Y. 38.—Is near *Crescent, Albany County, N. Y.*, on bridge No. 36, at center of towpath abutment, on face, sixth course, under coping, marked cross in circle B. M. with chisel. Canal B. M. No. 62.

N. Y. 39=L. S. 15.—Is near *Crescent, Albany County, N. Y.* (See p. 661.)

N. Y. 41.—Is near *Crescent, Albany County, N. Y.*, on bridge No. 38, on projection, sixth course, below coping, near center towpath abutment, marked cross in circle B. M. with chisel. Canal B. M. No. 64.

N. Y. 42=L. S. 16.—Is near *Vischers Ferry, Saratoga County, N. Y.* (See p. 662.)

N. Y. 43.—Is near *Vischers Ferry, Saratoga County, N. Y.*, on bridge No. 41, on face, towpath abutment, sixth course, below coping, near east angle, marked cross in circle B. M. Canal B. M. No. 68.

N. Y. 44.—Is near *Vischers Ferry, Saratoga County, N. Y.*, on bridge No. 42, on face, towpath abutment, fifth course, below coping, near west angle, marked cross in circle B. M. Canal B. M. No. 69.

N. Y. 45=L. S. 17.—Is near *Vischers Ferry, Saratoga County, N. Y.* (See p. 662.)

N. Y. 46=L. S. 18.—Is near *Vischers Ferry, Saratoga County, N. Y.* (See p. 662.)

N. Y. 47.—Is near *Vischers Ferry, Saratoga County, N. Y.*, on bridge No. 47, first bridge east of Lock No. 19, on top of first stone, under coping, east corner, east wing, on towpath abutment, marked cross in circle B. M. Canal B. M. No. 73.

N. Y. 48.—Is at *Vischers Ferry, Saratoga County, N. Y.*, on coping of Lock No. 19, near the end of the anchor, northeast gate, south lock, pier wall, marked cross in circle B. M. Canal B. M. No. 75.

N. Y. 49=L. S. 19.—Is at *Vischers Ferry, Saratoga County, N. Y.* (See p. 662.)

N. Y. 50.—Is near *Vischers Ferry, Saratoga County, N. Y.*, and is a point cut in a square between ends of anchor, north lock, southeast gate of Lock No. 20, new bench mark.

N. Y. 51.—Is at *Fondas Basin, Schenectady County, N. Y.*, on bridge 49, top of coping, east end wing, berme abutment, marked ⊗. Canal B. M. No. 8.

N. Y. 52=L. S. 21.—Is at *Rexford Flats, Saratoga County, N. Y.* (See p. 662.)

N. Y. 53=L. S. 22.—Is at *Rexford Flats, Saratoga County, N. Y.* (See p. 662.)

N. Y. 54.—Is at *Rexford Flats, Saratoga County, N. Y.*, on northeast corner of coping, on end of towpath wing, at north end of Upper Mohawk aqueduct, marked cross in circle B. M. Canal B. M. No. 86.

N. Y. 55.—Is at *Rexford Flats, Saratoga County, N. Y.*, on top dowel in coping of parapet, near end of parapet, towpath wing, south end of Upper Mohawk aqueduct, marked cross in circle B. M. Canal B. M. No. 87.

N. Y. 56.—Is near *Rexford Flats, Saratoga County, N. Y.*, on bridge No. 51, on top of coping, north wing, berme abutment, first bridge west of aqueduct, marked cross in circle B. M. Canal B. M. No. 88.

N. Y. 57.—Is a Deep Waterways bench mark at *Aqueduct Station, Schenectady County, N. Y.* (See p. 671.)

N. Y. 58=15 (1875).—Is near *Schenectady, Schenectady County, N. Y.* (See p. 849, App. 8, Report for 1899.)

N. Y. 59=L. S. 23.—Is near *Schenectady, Schenectady County, N. Y.* (See p. 662.)

N. Y. 60.—Is near *Schenectady, Schenectady County, N. Y.*, on bridge No. 53, on face of towpath abutment, near center, on projection of sixth course under coping, marked cross in circle B. M. Canal B. M. No. 90.

N. Y. 61=L. S. 24.—Is near *Schenectady, Schenectady County, N. Y.* (See p. 662.)

N. Y. 62.—Is at *Schenectady, Schenectady County, N. Y.*, on bridge No. 54, on top of coping, west wing wall, berme abutment, marked cross in circle B. M. Canal B. M. No. 92.

N. Y. 63.—Is at *Schenectady, Schenectady County, N. Y.*, on bridge No. 55, on top coping, on end of east wing of towpath abutment, marked cross in circle B. M. Canal B. M. No. 93.

N. Y. 64=L. S. 25.—Is at *Schenectady, Schenectady County, N. Y.* (See p. 662.)

N. Y. 65.—Is a Deep Waterways bench mark at *Schenectady, Schenectady County, N. Y.* (See p. 672.)

N. Y. 66=L. S. 26.—Is at *Schenectady, Schenectady County, N. Y.* (See p. 662.)

N. Y. 66a.—Is at *Schenectady, Schenectady County, N. Y.*, on bridge No. 57, Jefferson street, on southwest corner of coping of retaining wall, east of towpath abutment, marked cross in circle B. M. Canal B. M. No. 95.

N. Y. 66b.—Is at *Schenectady, Schenectady County, N. Y.*, on bridge No. 59, Liberty street, on coping of retaining wall, west end of bridge approach, towpath abutment, new bench mark, marked \square with chisel.

N. Y. 67.—Is a Deep Waterways bench mark at *Schenectady, Schenectady County, N. Y.* (See p. 672.)

N. Y. 68.—Is at *Schenectady, Schenectady County, N. Y.*, on top of coping, west end of parapet, southwest corner of wasteweer, opposite Westinghouse works, marked cross in circle B. M. Canal B. M. No. 97.

N. Y. 69.—Is at *Schenectady, Schenectady County, N. Y.*, and is a square cut on northeast corner of coping on culvert No. 28, towpath at west end of General Electric works, new bench mark.

N. Y. 70.—Is near *Schenectady, Schenectady County, N. Y.*, on bridge No. 63, Navoniers Bay, on projection of sixth course, below coping, near center of towpath abutment, on face, marked cross in circle B. M. Canal B. M. No. 98.

N. Y. 71=L. S. 28.—Is near *Schenectady, N. Y.* (See p. 662.)

N. Y. 72=L. S. 29.—Is near *Schenectady, Schenectady County, N. Y.* (See p. 662.)

N. Y. 73.—Is near *Schenectady, Schenectady County, N. Y.*, on bridge No. 64, on face towpath abutment, near west angle, on projection of sixth course below coping, marked cross in circle B. M. Canal B. M. No. 101.

N. Y. 74a=L. S. 30.—Near *Schenectady, N. Y.* (See p. 662.)

N. Y. 74.—Is near *Schenectady, Schenectady County, N. Y.*, on coping of Lock No. 24, between ends of anchor, northeast gate of north lock, marked cross in circle B. M. Canal B. M. No. 103.

N. Y. 75.—Is near *Schenectady, Schenectady County, N. Y.*, on bridge No. 65, on projection of sixth course, on face, near center of towpath abutment, marked cross in circle B. M. Canal B. M. No. 104.

N. Y. 76a.—Is a Deep Waterways bench mark near *Rotterdam Junction, Schenectady County, N. Y.* (See p. 672.)

N. Y. 76.—Is near *Rotterdam Junction, Schenectady County, N. Y.*, on bridge No. 66, on projection of sixth course below coping on face near east angle towpath abutment, marked cross in circle B. M. Canal B. M. No. 105.

N. Y. 77.—Is near *Rotterdam Junction, Schenectady County, N. Y.*, on Flat Stone Creek aqueduct, square cut east end of parapet, northeast corner, towpath side, new bench mark.

N. Y. 78.—Is near *Rotterdam Junction, Schenectady County, N. Y.*, on bridge No. 67, on projection of sixth course below coping near center on face of towpath abutment, marked cross in circle B. M. Canal B. M. 107.

N. Y. 79.—Is near *Rotterdam Junction, Schenectady County, N. Y.*, on bridge No. 68, on projection of seventh course below coping on face near west angle towpath abutment, marked cross in circle B. M. Canal B. M. 108.

N. Y. 80.—Is near *Rotterdam Junction, Schenectady County, N. Y.*, on projection of seventh course below coping near center on face of towpath abutment, marked cross in circle B. M. Canal B. M. 109.

N. Y. 81=L. S. 32.—Is near *Pattersonville, Schenectady County, N. Y.* (See p. 662.)

N. Y. 82.—Is near *Pattersonville, Schenectady County, N. Y.*, on coping of lock No. 25 between ends of anchor northeast gate of north lock, marked cross in circle B. M. Canal B. M. 111.

N. Y. 83=L. S. 33.—Is near *Pattersonville, Schenectady County, N. Y.* (See p. 663.)

N. Y. 84.—Is near *Pattersonville, Schenectady County, N. Y.*, on bridge No. 72, on projection of fourth course below coping on face of towpath abutment near west angle, marked cross in circle B. M. Canal B. M. 113.

N. Y. 85a.—Is near *Pattersonville, Schenectady County, N. Y.*, on projection of seventh course fourth stone from southeast angle of pier railroad bridge over Erie Canal and Mohawk River about three-quarters of a mile east of Pattersonville, marked cross in circle B. M. New bench mark.

N. Y. 85.—Is near *Pattersonville, Schenectady County, N. Y.*, on bridge No. 73, on coping end of west wing berme abutment, marked cross in circle B. M. Canal B. M. No. 114.

N. Y. 86.—Is near *Pattersonville, Schenectady County, N. Y.*, on the coping of parapet Sansai Kill aqueduct at east angle (junction of wing with straight wall), marked cross in circle B. M. Canal B. M. No. 115.

N. Y. 87.—Is near *Pattersonville, Schenectady County, N. Y.*, on flat sandstone on back angle of towpath at west end of second tangent east of bridge No. 76, marked cross in circle B. M. Canal B. M. No. 118.

N. Y. 88=L. S. 36.—Is near *Amsterdam, Montgomery County, N. Y.* (See p. 663.)

N. Y. 89=L. S. 37.—Is near *Amsterdam, Montgomery County, N. Y.* (See p. 663.)

N. Y. 90=L. S. 38.—Is near *Amsterdam, Montgomery County, N. Y.* (See p. 663.)

N. Y. 91=L. S. 39.—Is near *Amsterdam, Montgomery County, N. Y.* (See p. 663.)

N. Y. 92.—Is near *Amsterdam, Montgomery County, N. Y.*, and is a square cut on northwest corner of wastewear top of east wall, one-half mile east of *Amsterdam River bridge*. New bench mark.

N. Y. 93=L. S. 40.—Is at *Amsterdam, Montgomery County, N. Y.* (See p. 663.)

N. Y. 94=L. S. 42.—Is at *Amsterdam, Montgomery County, N. Y.* (See p. 663.)

N. Y. 95=L. S. 43.—Is near *Amsterdam, Montgomery County, N. Y.* (See p. 663.)

N. Y. 96.—Is near *Fort Hunter, Montgomery County, N. Y.*, on bridge No. 80, on projection sixth course below coping on face in center of towpath abutment, marked cross in circle B. M. Canal B. M. No. 134.

N. Y. 97=L. S. 44.—Is near *Fort Hunter, Montgomery County, N. Y.* (See p. 663.)

N. Y. 98.—Is near *Fort Hunter, Montgomery County, N. Y.*, on the coping of Lock No. 29 between ends of anchor, northeast gate of north lock, marked cross in circle B. M. Canal B. M. No. 139.

N. Y. 99.—Is near *Fort Hunter, Montgomery County, N. Y.*, on bridge No. 81, on projection of fourth course below coping on face of towpath abutment near east angle, marked cross in circle B. M. Canal B. M. No. 137.

N. Y. 100.—Is at *Fort Hunter, Montgomery County, N. Y.*, on coping of Lock No. 30 between ends of anchor, northeast gate of north lock, marked cross in circle B. M. Condition poor. Canal B. M. No. 139.

N. Y. 100a=L. S. 45.—Is at *Fort Hunter, Montgomery County, N. Y.* (See p. 663.)

N. Y. 101.—Is a Deep Waterway bench mark at *Fort Hunter, Montgomery County, N. Y.* (See p. 673.)

N. Y. 102.—Is near *Fort Hunter, Montgomery County, N. Y.*, on bridge No. 83, and is cross cut on face of corner stone, fifth course, northeast corner of towpath abutment, marked cross in circle B. M.

N. Y. 104.—Is near *Auriesville, Montgomery County, N. Y.*, on bridge No. 84, on top of lower step west wing berme abutment, marked cross in circle B. M. Canal B. M. No. 142.

N. Y. 105.—Is at *Auriesville, Montgomery County, N. Y.*, on bridge No. 85, on face towpath abutment near east angle on projection fifth course below coping, marked cross in circle B. M. Canal B. M. 143.

N. Y. 106.—Is a Deep Waterways bench mark near *Auriesville, Montgomery County, N. Y.* (See p. 673.)

N. Y. 107.—Is near *Auriesville, Montgomery County, N. Y.*, on bridge No. 86, on face of towpath abutment near west angle on projection sixth course below coping, marked cross in circle B. M. Canal B. M. No. 144.

N. Y. 109.—Is near *Fultonville, Montgomery County, N. Y.* (See L. S. 46, p. 663.)

N. Y. 110.—Is near *Fultonville, Montgomery County, N. Y.*, on bridge No. 89, on face of towpath abutment near west angle on projection of fourth course below coping, marked cross in circle B. M. Canal B. M. No. 146.

N. Y. 111.—Is near *Fultonville, Montgomery County, N. Y.*, on bridge No. 90, on top of lower step west wing berme abutment, marked cross in circle B. M. Canal B. M. No. 147.

N. Y. 112=L. S. 47.—Is near *Fultonville, Montgomery County, N. Y.* (See p. 663.)

N. Y. 113.—Is near *Fultonville, Montgomery County, N. Y.*, on bridge No. 91, on top of lower step east berme abutment, marked cross in circle B. M. Canal B. M. No. 148.

N. Y. 114=L. S. 48.—Is at *Fultonville, Montgomery County, N. Y.* (See p. 663.)

N. Y. 115.—Is a Deep Waterways bench mark at *Fultonville, Montgomery County, N. Y.* (See p. 673.)

N. Y. 116.—Is at *Fultonville, Montgomery County, N. Y.*, at bridge No. 95, on top coping at end of east wing towpath abutment, marked cross in circle B. M. Canal B. M. No. 150.

N. Y. 117=L. S. 49.—Is near *Fultonville, Montgomery County, N. Y.* (See p. 664.)

N. Y. 118=L. S. 50.—Is near *Fultonville, Montgomery County, N. Y.* (See p. 664.)

N. Y. 119.—Is near *Fultonville, Montgomery County, N. Y.*, on bridge No. 97, on the face of the top stone, end of west wing, towpath abutment, marked cross in circle B. M. Canal B. M. No. 152.

N. Y. 120=L. S. 51.—Is near *Fultonville, Montgomery County, N. Y.* (See p. 664.)

N. Y. 121.—Is a Deep Waterways bench mark near *Downing, Montgomery County, N. Y.* (See p. 673.)

N. Y. 122.—Is near *Downing, Montgomery County, N. Y.*, on bridge No. 99, on top of second stone, below coping, at end of east wing, berm abutment, marked cross in circle B. M. Canal B. M. No. 155.

N. Y. 123.—Is near *Downing, Montgomery County, N. Y.*, on top of coping, north-east corner of northeast wing of Leonardson's Creek aqueduct, towpath side, marked cross in circle B. M. Canal B. M. No. 156.

N. Y. 124.—Is a Deep Waterways bench mark near *Downing, Montgomery County, N. Y.* (See p. 673.)

N. Y. 125=L. S. 52.—Is near *Downing, Montgomery County, N. Y.* (See p. 664.)

N. Y. 126.—Is near *West Downing, Montgomery County, N. Y.*, on face of towpath abutment of private road bridge, east lock No. 31, on projection of second course from bottom near center. New bench mark marked cross in circle B. M.

N. Y. 127=L. S. 53.—Is near *Sprakers, Montgomery County, N. Y.* (See p. 664.)

N. Y. 128=L. S. 54.—Is at *Sprakers, Montgomery County, N. Y.* (See p. 664.)

N. Y. 129=L. S. 55.—Is at *Sprakers, Montgomery County, N. Y.* (See p. 664.)

N. Y. 130.—Is near *Sprakers, Montgomery County, N. Y.*, on bridge No. 105, on face towpath abutment, near west angle on projection, fifth course below coping, marked cross in circle B. M. Canal B. M. No. 162.

N. Y. 131.—Is a Deep Waterways bench mark near *Sprakers, Montgomery County, N. Y.* (See p. 673.)

N. Y. 132.—Is near *Sprakers, Montgomery County, N. Y.*, on bridge 106, on face of towpath abutment near center, sixth course below coping. (See note 44, p. 584.)

N. Y. 133.—Is near *Sprakers, Montgomery County, N. Y.*, on bridge No. 107, on face of towpath abutment, near west angle, on projection, seventh course below coping, marked \oplus B. M. Canal B. M. No. 164.

N. Y. 134.—Is near *Canajoharie, Montgomery County, N. Y.*, at bridge No. 108, on face of towpath abutment near center, on projection of fourth course below coping, marked across in circle B. M. Canal B. M. No. 165.

N. Y. 135 = L. S. 56.—Is at *Canajoharie, Montgomery County, N. Y.* (See p. 664.)

N. Y. 136 = L. S. 57.—Is at *Canajoharie, Montgomery County, N. Y.* (See p. 664.)

N. Y. 137.—Is near *Canajoharie, Montgomery County, N. Y.*, on bridge No. 111, on coping at end of west wing towpath abutment, marked cross in circle B. M. Canal B. M. No. 167.

N. Y. 138.—Is near *Canajoharie, Montgomery County, N. Y.*, on bridge No. 112, on rear upper corner of stone under coping at west wing, berme abutment, marked cross in circle B. M. Canal B. M. No. 168.

N. Y. 139.—Is near *Fort Plain, Montgomery County, N. Y.*, on bridge No. 113, on face near center of east wing, towpath abutment, on projection second stone above ground, marked cross in circle B. M. Canal B. M. No. 169.

N. Y. 140 = L. S. 58.—Is near *Fort Plain, Montgomery County, N. Y.* (See p. 664.)

N. Y. 141 = L. S. 59.—Is near *Fort Plain, Montgomery County, N. Y.* (See p. 664.)

N. Y. 142a.—Is a Deep Waterways bench mark at *Fort Plain, Montgomery County, N. Y.* (See p. 673.)

N. Y. 142 = L. S. 60.—Is at *Fort Plain, Montgomery County, N. Y.* (See p. 664.)

N. Y. 143.—Is near *Fort Plain, Montgomery County, N. Y.*, on bridge No. 118, on face of towpath abutment, on projection sixth course below coping, marked cross in circle B. M. Canal B. M. No. 174.

N. Y. 144 = L. S. 61.—Is near *Fort Plain, Montgomery County, N. Y.* (See p. 664.)

N. Y. 145.—Is near *Fort Plain, Montgomery County, N. Y.*, on coping of culvert No. 63, near center of towpath, marked cross in circle B. M. Canal B. M. No. 175.

N. Y. 146.—Is near *Fort Plain, Montgomery County, N. Y.*, on top of coping of west wing of culvert No. 65, towpath side, marked \square B. M. New bench mark.

N. Y. 147.—Is near *St. Johnsville, Montgomery County, N. Y.*, on corner of coping east of wing wall, towpath side, of culvert No. 67, marked cross in circle B. M. Canal B. M. No. 176.

N. Y. 148 = L. S. 62.—Is near *St. Johnsville, Montgomery County, N. Y.* (See p. 664.)

N. Y. 149.—Is near *St. Johnsville, Montgomery County, N. Y.*, on bridge No. 119, on face of towpath abutment, near west angle, on projection of sixth course below coping, marked cross in circle B. M. Canal B. M. No. 177.

N. Y. 150.—Is near *St. Johnsville, Montgomery County, N. Y.*, on coping of Lock No. 33, between ends of anchor, northeast gate of north lock, marked cross in circle B. M. Canal B. M. No. 179.

N. Y. 151 = L. S. 63.—Is near *St. Johnsville, Montgomery County, N. Y.* (See p. 664.)

N. Y. 152 = 34a (1875).—Is near *St. Johnsville, Montgomery County, N. Y.*, on bridge No. 120, on face of second course of masonry, west wing wall, towpath abutment, marked B. M. with a chisel.

N. Y. 153.—Is at *St. Johnsville, Montgomery County, N. Y.*, on top of second step, east wing, towpath abutment of bridge No. 121, and is a new bench mark, marked □ B. M. This bench mark is not identical with L. S. 64, p. 665.

N. Y. 154.—Is a Deep Waterways bench mark at *Mindenville, Montgomery County, N. Y.* (See p. 665.)

N. Y. 155 = L. S. 65.—Is near *Mindenville, Montgomery County, N. Y.* (See p. 665.)

N. Y. 156.—Is near *Mindenville, Montgomery County, N. Y.*, on bridge No. 124, on the face of the towpath abutment near west angle on projection of seventh course below coping, marked cross in circle B. M. Canal B. M. No. 185.

N. Y. 157.—Is near *Mindenville, Montgomery County, N. Y.*, on bridge No. 125, on projection of second course east wing towpath abutment, marked cross in circle B. M.

N. Y. 158 = L. S. 66.—Is near *Mindenville, Montgomery County, N. Y.* (See p. 665.)

N. Y. 159.—Is near *Mindenville, Montgomery County, N. Y.*, on bridge No. 126, on projection of seventh course below coping near center towpath abutment, marked cross in circle B. M. Canal B. M. No. 186.

N. Y. 160.—Is a Deep Waterways bench mark near *Indian Castle, Herkimer County, N. Y.* (See p. 674.)

N. Y. 161.—Is near *Indian Castle, Herkimer County, N. Y.*, on bridge No. 128, on face of towpath abutment near west angle on projection of seventh course below coping, marked cross in circle B. M. Canal B. M. No. 187.

N. Y. 162.—Is near *Indian Castle, Herkimer County, N. Y.*, on bridge No. 129, on face of towpath abutment near center on projection seventh course below coping, marked cross in circle B. M. Canal B. M. No. 188.

N. Y. 163.—Is near *Indian Castle, Herkimer County, N. Y.*, on coping of Lock No. 35 between ends of anchor northeast gate of north lock, marked cross in circle B. M. Canal B. M. No. 190.

N. Y. 164 = L. S. 67.—Is at *Indian Castle, Herkimer County, N. Y.* (See p. 665.)

N. Y. 165.—Is near *Indian Castle, Herkimer County, N. Y.*, on bridge No. 131, at center of west wing on face of towpath abutment third course from ground, marked with circle.

N. Y. 166.—Is near *Indian Castle, Herkimer County, N. Y.*, on bridge No. 131, on face towpath abutment on projection third course from ground (near center), marked with circle.

N. Y. 167.—Is near *Indian Castle, Herkimer County, N. Y.*, on bridge No. 132, on top of coping, east wing, berme abutment of farm bridge, marked cross in circle with chisel. Canal B. M. No. 192.

N. Y. 168 = L. S. 68.—Is near *Indian Castle, Herkimer County, N. Y.* (See p. 665.)

N. Y. 169 = L. S. 69.—Is at *Little Falls, Herkimer County, N. Y.* (See p. 665.)

N. Y. 170 = L. S. 70.—Is at *Little Falls, Herkimer County, N. Y.* (See p. 665.)

N. Y. 171 = L. S. 71.—Is at *Little Falls, Herkimer County, N. Y.* (See p. 665.)

N. Y. 172 = L. S. 72.—Is at *Little Falls, Herkimer County, N. Y.* (See p. 665.)

N. Y. 173.—Is a Deep Waterways bench mark at *Little Falls, Herkimer County, N. Y.* (See p. 674.)

N. Y. 174.—Is near *Little Falls, Herkimer County, N. Y.*, on top of lower step east wing towpath abutment third bridge west of lock No. 39, marked □ with chisel (private bridge).

N. Y. 175.—Is a Deep Waterways bench mark near *Little Falls, Herkimer County, N. Y.* (See p. 674.)

N. Y. 176.—Is near *Little Falls, Herkimer County, N. Y.*, on bridge No. 138, on top of coping, west wing, berme abutment of farm bridge, marked cross in circle with chisel. Canal B. M. No. 205.

N. Y. 177=L. S. 73.—Is near *Little Falls, Herkimer County, N. Y.* (See p. 665.)

N. Y. 178.—Is near *Little Falls, Herkimer County, N. Y.*, on coping of lock No. 40 at ends of anchor, northeast gate, north lock, marked cross in circle with chisel. Canal B. M. No. 207.

N. Y. 179=L. S. 74.—Is near *Little Falls, Herkimer County, N. Y.* (See p. 665.)

N. Y. 180.—Is near *Herkimer, Herkimer County, N. Y.*, on bridge No. 139, on top of lower step, east wing, towpath abutment, second bridge west of lock No. 40, marked □ with chisel.

N. Y. 181.—Is near *Herkimer, Herkimer County, N. Y.*, on bridge No. 140, on top of coping, west wing, towpath abutment of farm bridge, marked cross in circle with chisel. Canal B. M. No. 209.

N. Y. 182.—Near *Herkimer, Herkimer County, N. Y.* (See p. 674.)

N. Y. 183=L. S. 75.—Is near *Herkimer, Herkimer County, N. Y.* (See p. 665.)

N. Y. 184.—Is near *Herkimer, Herkimer County, N. Y.*, on bridge No. 143, on coping, east wing, towpath abutment, farm bridge, marked with chisel.

N. Y. 185=L. S. 76.—Is near *Herkimer, Herkimer County, N. Y.* (See p. 665.)

N. Y. 186=L. S. 77.—Is at *Herkimer, Herkimer County, N. Y.* (See p. 665.)

N. Y. 187.—At *Herkimer, Herkimer County, N. Y.* (See p. 674.)

N. Y. 188.—Is near *Mohawk, Herkimer County, N. Y.*, cut in small shelf on third stone from west end lower course, towpath abutment, of street railway bridge between *Herkimer* and *Mohawk*.

N. Y. 189=L. S. 78.—Is at *Mohawk, Herkimer County, N. Y.* (See p. 665.)

N. Y. 190.—Is at *Mohawk, Herkimer County, N. Y.*, and is a cross cut in circle on northwest corner, lower step, west wing, berme abutment, *Mohawk* canal bridge.

N. Y. 191=L. S. 79.—Is at *Mohawk, Herkimer County, N. Y.* (See p. 665.)

N. Y. 192.—Is at *Mohawk, Herkimer County, N. Y.*, on lock No. 43, square cut on coping between ends of anchor, northeast gate, towpath lock.

N. Y. 193=L. S. 80.—Is near *Mohawk, Herkimer County, N. Y.* (See p. 666.)

N. Y. 194.—Is at *Mohawk, Herkimer County, N. Y.*, circle cut in square on southwest corner, lower step, west wing, towpath abutment, *Meyer's* farm bridge.

N. Y. 195=L. S. 81.—Is at *Ilion, Herkimer County, N. Y.* (See p. 666.)

N. Y. 196.—Is at *Ilion, Herkimer County, N. Y.*, and is a circle cut in square on southeast corner of top foundation stone of northeast stair landing near post of *Railroad* street lift bridge.

N. Y. 197=L. S. 82.—Is at *Ilion, Herkimer County, N. Y.* (See p. 666.)

N. Y. 198.—Is at *Ilion, Herkimer County, N. Y.*, and is a circle cut in square on southwest corner, lower step of west wing of towpath abutment of London bridge.

N. Y. 199.—Is near *Ilion, Herkimer County, N. Y.*, and is a cross cut in circle on the northeast corner, second step of east wing, towpath abutment of street railway bridge between *Ilion* and *Frankfort*.

N. Y. 200=L. S. 83.—Is near *Ilion, Herkimer County, N. Y.* (See p. 666.)

N. Y. 201.—Is near *Ilion, Herkimer County, N. Y.*, and is a circle cut in square on southwest corner, lower step, west wing, towpath abutment of bridge 650 feet west of lock 44, *Erie Canal*.

N. Y. 202.—Is near *Frankfort, Herkimer County, N. Y.*, and is a circle cut in square on southwest corner of lower step, west wing, towpath abutment *Reese's road bridge*.

N. Y. 203=L. S. 85.—Is at *Frankfort, Herkimer County, N. Y.* (See p. 666.)

N. Y. 204=L. S. 84.—Is at *Frankfort, Herkimer County, N. Y.* (See p. 666.)

N. Y. 205.—Is about three-quarters of a mile west of *Frankfort, Herkimer County, N. Y.*, and is a circle cut in square on southeast corner of lower step, east wing, towpath abutment of *Beehive bridge*.

N. Y. 206.—Is near *Frankfort, Herkimer County, N. Y.*, and is a cross cut in circle on southeast corner, second step, east wing, towpath abutment, bridge No. 161, next west of *Beehive bridge*.

N. Y. 207.—Is at *Frankfort, Herkimer County, N. Y.*, and is a circle cut in a projection on the face of fifth stone from the west end in the second course in towpath abutment, *Center bridge*.

N. Y. 208.—Is near *Frankfort, Herkimer County, N. Y.*, and is a circle cut on the southwest corner, of the lower step, west wing, towpath abutment, *Bargy's farm bridge*, 5 miles east of *Herkimer-Oneida county line*.

N. Y. 209.—Is near *Frankfort, Herkimer County, N. Y.*, and is a circle cut in the southwest corner, lower step, west wing, towpath abutment, farm bridge No. 164, 4.4 miles east of *Herkimer-Oneida county line*.

N. Y. 210.—Is near *Utica, Oneida County, N. Y.*, and is a cross cut in a circle on the face of stone near west angle of towpath abutment of farm bridge No. 165, 4 miles east of *Herkimer-Oneida county line*.

N. Y. 211.—Is near *Utica, Oneida County, N. Y.*, and is a circle cut on the first stone west of east angle, second course, towpath abutment, farm bridge No. 163, 3 miles east of *Herkimer-Oneida county line*.

N. Y. 212.—Is near *Utica, Oneida County, N. Y.*, and is a cross cut in a circle on projection of first stone in second course, west angle of towpath abutment, farm bridge No. 167, 3.7 miles east of *Herkimer-Oneida county line*.

N. Y. 213.—Is near *Utica, Oneida County, N. Y.*, and is a cross cut in a circle on projection on face of first stone west of east angle in second course, towpath abutment, farm bridge No. 168, 2.2 miles east of *Herkimer-Oneida county line*.

N. Y. 214.—Is near *Utica, Oneida County, N. Y.*, and is a circle cut in a square on a projection on the face of the second stone from the east angle in the second course, towpath abutment, harbor bridge No. 169.

N. Y. 215=L. S. 87.—Is near *Utica, Oneida County, N. Y.* (See p. 666.)

N. Y. 216.—Is near *Utica, Oneida County, N. Y.*, and is a cross cut in a circle on the southeast corner, lower step, east wing, towpath abutment of first bridge east of Herkimer-Oneida County line.

N. Y. 217=L. S. 88.—Is near *Utica, Oneida County, N. Y.* (See p. 666.)

N. Y. 218.—Is at *Utica, Oneida County, N. Y.*, and is a tack in an elm stub 40 feet from the front angle of towpath, about 200 feet east of Mohawk Valley Cotton Mills.

N. Y. 219=L. S. 89.—Is at *Utica, Oneida County, N. Y.* (See p. 666.)

N. Y. 220=U. S. G. S.—Is at *Utica, Oneida County, N. Y.*, on the post-office; bronze tablet west of east basement door, rear of building, marked U. S. Geological Survey B. M.

N. Y. 221=L. S. 90.—Is at *Utica, Oneida County, N. Y.* (See p. 666.)

N. Y. 222=L. S. 91.—Is at *Utica, Oneida County, N. Y.* (See p. 666.)

N. Y. 223=L. S. 92.—Is at *Utica, Oneida County, N. Y.* (See p. 666.)

N. Y. 224.—Is at *Utica, Oneida County, N. Y.*, and is a copper plug in the bottom step, east wing, towpath abutment, Platt street.

N. Y. 225=L. S. 93.—Is near *Utica, Oneida County, N. Y.* (See p. 666.)

N. Y. 226.—Is near *Utica, Oneida County, N. Y.*, and is a copper plug, lower step, east wing, towpath abutment, Yorkville road bridge.

N. Y. 227.—Is near *Whitesboro, Oneida County, N. Y.*, and is a copper plug in the second stone from the northeast end of the towpath parapet wall of Saquoit Creek aqueduct.

N. Y. 228=L. S. 94.—Is at *Whitesboro, Oneida County, N. Y.* (See p. 666.)

N. Y. 229=L. S. 95.—Is at *Whitesboro, Oneida County, N. Y.* (See p. 666.)

N. Y. 230=L. S. 96.—Is near *Oriskany, Oneida County, N. Y.* (See p. 666.)

N. Y. 231.—Is near *Oriskany, Oneida County, N. Y.*, and is a copper plug, southeast corner, bottom step, east wing, towpath abutment, Evans's farm bridge, just east of Oriskany.

N. Y. 232=L. S. 97.—Is at *Oriskany, Oneida County, N. Y.* (See p. 666.)

N. Y. 233=L. S. 98.—Is near *Oriskany, Oneida County, N. Y.* (See p. 666.)

N. Y. 234.—Is $1\frac{3}{4}$ miles west of *Oriskany, Oneida County, N. Y.*, and is a copper plug in the southwest corner, bottom step, west wing, towpath abutment, Kieley's farm bridge.

N. Y. 235.—Is 3 miles west of *Oriskany, Oneida County, N. Y.*, and is a copper plug, southeast corner, bottom step, east wing, towpath abutment, Murphy's farm bridge.

N. Y. 236.—Is $4\frac{1}{2}$ miles west of *Oriskany, Oneida County, N. Y.*, and is a copper plug, southwest corner, bottom step, west wing, towpath abutment, Clark's farm bridge.

N. Y. 237=L. S. 100.—Is at *Stanwix, Oneida County, N. Y.* (See p. 666.)

N. Y. 238.—Is at *Rome, Oneida County, N. Y.*, and is a knob cut on projection on face of stone in lower course near west end of towpath abutment, George street bridge.

N. Y. 239=L. S. 103.—Near *Rome, Oneida County, N. Y.* (See p. 666.)

N. Y. 240.—Is near *Rome, Oneida County, N. Y.*, and is a knob cut on the face of the first stone, third course, west wing, towpath abutment, Brainard's farm bridge, just east of Fort Bull waste weir.

N. Y. 241=L. S. 105.—Is 4.8 miles west of *Rome, Oneida County, N. Y.* (See p. 666.)

N. Y. 242.—Is near *New London, Oneida County, N. Y.*, and is a knob cut on the face of stone in second course, towpath abutment, Sand's farm bridge.

N. Y. 243=L. S. 106.—Is at *New London, Oneida County, N. Y.* (See p. 666.)

N. Y. 244.—Is near *New London, Oneida County, N. Y.*, and is a copper plug in west end of foundation stone of berme supports, Grove Spring road bridge.

N. Y. 245=L. S. 107.—Is at *Stacys Basin, Oneida County, N. Y.* (See p. 666.)

N. Y. 246.—Is near *Stacys Basin, Oneida County, N. Y.*, on bridge No. 50, Happy Valley road bridge, copper plug, lower step, east wing, towpath abutment.

N. Y. 247=L. S. 110.—Is at *Higginsville, Oneida County, N. Y.* (See p. 666.)

N. Y. 248.—Is at *Higginsville, Oneida County, N. Y.*, on bridge No. 52, west road bridge, square cut on fourth step, west wing, towpath abutment.

N. Y. 249.—Is at *Higginsville, Oneida County, N. Y.*, and is a square cut on the northeast corner of parapet of first culvert west of bridge No. 52, towpath side.

N. Y. 250.—Is near *Higginsville, Oneida County, N. Y.*, on bridge No. 53, Dunbarton bridge, copper plug, step flush with ground, east wing, towpath abutment.

N. Y. 251.—Is near *Higginsville, Oneida County, N. Y.*, on culvert No. 30, square cut northeast corner of coping, towpath side.

N. Y. 252.—Is near *Higginsville, Oneida County, N. Y.*, on culvert No. 31, square cut northeast corner of coping, towpath side.

N. Y. 253.—Is near *Higginsville, Oneida County, N. Y.*, on bridge No. 54, Durkee's road bridge, copper plug, third step, east wing, towpath abutment.

N. Y. 254.—Is near *Higginsville, Oneida County, N. Y.*, on bridge No. 55, State road bridge, copper plug, second step, east wing, towpath abutment.

N. Y. 255.—Is near *Higginsville, Oneida County, N. Y.*, and is a square cut on the northeast corner of coping of culvert just east of Midland Railroad bridge, towpath side.

N. Y. 256.—Is near *Durhamville, Oneida County, N. Y.*, and is on culvert No. 34, copper plug, northeast corner, east end of parapet coping, towpath side.

N. Y. 257.—Near *Durhamville, Oneida County, N. Y.*, on bridge No. 56, east road bridge, copper plug, third step, west wing, towpath abutment.

N. Y. 258.—Is at *Durhamville, Oneida County, N. Y.*, on bridge No. 57, Main street bridge, copper plug, third step, east wing, towpath abutment.

N. Y. 259.—Is at *Durhamville, Oneida County, N. Y.*, on waste weir No. 4, square cut on southeast corner of stone, north end of coping of west abutment.

N. Y. 260.—Is at *Durhamville, Oneida County, N. Y.*, on bridge No. 58, Bennett's road bridge, copper plug, lower step, west wing, towpath abutment.

N. Y. 261.—Is near *Durhamville, Oneida County, N. Y.*, on bridge No. 59, Shohamer's road bridge, copper plug, second step, east wing, berme abutment.

N. Y. 262.—Is near *Durhamville, Oneida County, N. Y.*, on the Cowasselon aqueduct No. 3, copper plug near center of east face of coping of the buttress, east wing, towpath side.

N. Y. 263.—Is near *Canastota, Madison County, N. Y.*, on bridge No. 60, Lenox basin road bridge, copper plug, second step, west wing, towpath abutment.

N. Y. 264.—Is near *Canastota, Madison County, N. Y.*, on culvert No. 38, copper plug, coping of parapet over face of east wing, towpath abutment.

N. Y. 265.—Is at *Canastota, Madison County, N. Y.*, on the Elmira, Cortland and Northern Railroad bridge, point cut on projection of third course of masonry above ground, towpath abutment, near center.

N. Y. 266.—Is at *Canastota, Madison County, N. Y.*, on bridge No. 61, Peterboro street bridge, chisel mark on coping, berme vertical wall, west side of bridge, foot of step.

N. Y. 267.—Is at *Canastota, Madison County, N. Y.*, on bridge No. 62, Main street bridge, copper plug, third step, east wing, towpath abutment.

N. Y. 268.—Is at *Canastota, Madison County, N. Y.*, on culvert at cider mill, copper plug, northeast corner coping of parapet, towpath side.

N. Y. 269.—Is near *Canastota, Madison County, N. Y.*, on bridge No. 63, Beebe's road bridge, copper plug, fourth step, east wing, towpath abutment.

N. Y. 270.—Is near *Canastota, Madison County, N. Y.*, on bridge No. 64, Herick's road bridge, square cut on fourth step, east wing, towpath abutment.

N. Y. 271.—Is near *Canastota, Madison County, N. Y.*, on culvert No. 43, copper plug, northwest corner, coping of parapet, towpath side, at Fuller's bridge.

N. Y. 272.—Is near *Canastota, Madison County, N. Y.*, on bridge No. 66, New Boston road bridge, copper plug, fourth step, east wing, towpath abutment.

N. Y. 273.—Is near *Canaseraga, Madison County, N. Y.*, on culvert No. 44, square cut on northwest corner of coping of parapet, towpath side.

N. Y. 274.—Is near *Canaseraga, Madison County, N. Y.*, on bridge No. 67, Canaseraga road bridge, copper plug, fourth step, east wing, towpath side abutment.

N. Y. 275.—Is near *Chittenango, Madison County, N. Y.*, on bridge No. 68, Chittenango road bridge, square cut on second step, east wing, towpath abutment.

N. Y. 276.—Is at *Chittenango, Madison County, N. Y.*, Chittenango aqueduct No. 4, copper plug, stone under coping of parapet, west wing, towpath side.

N. Y. 277.—Is near *Chittenango, Madison County, N. Y.*, on culvert No. 45, square cut on northeast corner of coping of parapet, towpath side.

N. Y. 278.—Is near *Chittenango, Madison County, N. Y.*, on bridge No. 69, Bolivar road bridge, copper plug, stone under coping of buttress, west wing, towpath abutment.

N. Y. 279.—Is near *Chittenango, Madison County, N. Y.*, on bridge No. 70, White's road bridge, copper plug, coping of buttress, east wing, towpath abutment.

N. Y. 280.—Is near *Kirkville, Onondaga County, N. Y.*, on bridge No. 71, Pools Brook road bridge, copper plug, coping buttress, east wing, towpath abutment.

N. Y. 281.—Is near *Kirkville, Onondaga County, N. Y.*, on bridge No. 72, Kirkville road bridge, copper plug, coping of buttress, east wing, towpath abutment.

N. Y. 282.—Is near *Manlius, Onondaga County, N. Y.*, on culvert No. 47, copper plug, northeast corner coping, towpath parapet.

N. Y. 283.—Is near *Manlius, Onondaga County, N. Y.*, on culvert No. 48, copper plug, northeast corner of coping, towpath parapet.

N. Y. 284.—Is at *Manlius, Onondaga County, N. Y.*, on bridge No. 73, Manlius road bridge, copper plug, lower step, east wing, berme abutment.

N. Y. 285.—Is near *Dewitt, Onondaga County, N. Y.*, on bridge No. 74, Stearn's farm bridge, square cut, lower step, east wing, berme abutment.

N. Y. 286.—Is near *Dewitt, Onondaga County, N. Y.*, on Limestone Creek aqueduct, copper plug, southwest corner of parapet coping, west wing, towpath side.

N. Y. 287.—Is near *Dewitt, Onondaga County, N. Y.*, on bridge No. 76, Burdick's road bridge, square cut on coping of buttress, east wing, towpath abutment.

N. Y. 288.—Is near *Dewitt, Onondaga County, N. Y.*, on culvert No. 49, square cut, northeast corner coping of parapet, towpath side.

N. Y. 289.—Is near *Dewitt, Onondaga County, N. Y.*, on Butternut Creek aqueduct, copper plug, coping of parapet, east stone, east wing, towpath side.

N. Y. 290.—Is near *Syracuse, Onondaga County, N. Y.*, on Thompsons Landing road bridge, copper plug, coping of west buttress, towpath side.

N. Y. 291.—Is near *Syracuse, Onondaga County, N. Y.*, on private bridge, point cut on second step, east wing, towpath side.

N. Y. 292.—Is near *Syracuse, Onondaga County, N. Y.*, on stop gate one-half mile east of lock No. 47, copper plug, west end of coping, towpath side.

N. Y. 293.—Is at *Syracuse, Onondaga County, N. Y.*, on lock No. 47, copper plug, southeast hollow quoin, towpath lock.

N. Y. 294.—Is at *Syracuse, Onondaga County, N. Y.*, on lock No. 48, copper plug, southeast hollow quoin, towpath lock.

N. Y. 295.—Is at *Syracuse, Onondaga County, N. Y.*, on bridge No. 80, William street bridge, copper plug, third step, east wing, towpath abutment.

N. Y. 296.—Is at *Syracuse, Onondaga County, N. Y.*, on bridge No. 81, Catherine street bridge, square cut west of bridge, seat on vertical wall, towpath side.

N. Y. 297.—Is at *Syracuse, Onondaga County, N. Y.*, on lock No. 49, copper plug, southeast hollow quoin, towpath lock.

N. Y. 298.—Is at *Syracuse, Onondaga County, N. Y.*, on bridge No. 82, Orange street, square cut on second step, east wing, towpath abutment.

N. Y. 299.—Is at *Syracuse, Onondaga County, N. Y.*, on bridge No. 88, Grape street, copper plug, third step, west wing, towpath abutment.

N. Y. 300.—Is at *Syracuse, Onondaga County, N. Y.*, on weighlock, copper plug, northeast hollow quoin.

N. Y. 301.—Is at *Syracuse, Onondaga County, N. Y.*, United States Geological Survey bench mark, at weighlock; tablet set in doorsill of entrance to collector's office.

N. Y. 302.—Is at *Syracuse, Onondaga County, N. Y.*, on bridge No. 86, Salina street bridge, square cut southwest corner on belting of abutment $2\frac{1}{2}$ feet above, towpath side.

N. Y. 303.—Is at *Syracuse, Onondaga County, N. Y.*, on bridge No. 87, Clinton street bridge, square cut on northwest corner of east foundation stone to stairway on towpath side.

N. Y. 304.—Is at *Syracuse, Onondaga County, N. Y.*, on bridge No. 89, West street, copper plug, in capstone, northeast corner lift tower.

N. Y. 305 = U. S. G. S.—Is at *Syracuse, Onondaga County, N. Y.*, on bridge No. 90, Geddes street, southwest corner of stairway landing pier, foot of west towpath stairs.

N. Y. 306.—Is at *Syracuse, Onondaga County, N. Y.*, on New York Central Railroad bridge, over Genesee street bridge, square cut on first step, south wing, west abutment.

N. Y. 307.—Is at *Syracuse, Onondaga County, N. Y.*, on bridge No. 92, Bridge street, square cut on stone under coping, west wing, towpath abutment.

N. Y. 308.—Is near *Syracuse, Onondaga County, N. Y.*, on discharge well, near salt company's bridge, copper plug, southwest corner stone coping.

N. Y. 309.—Is near *Syracuse, Onondaga County, N. Y.*, on bridge No. 93, Blast Furnace road bridge, square cut on coping at buttress, west wing, towpath abutment.

N. Y. 310.—Is near *Syracuse, Onondaga County, N. Y.*, on bridge No. 94, Gere's Landing bridge, copper plug, coping buttress, west wing, towpath abutment.

N. Y. 311.—Is near *Syracuse, Onondaga County, N. Y.*, on culvert about 700 feet east of lock No. 50, square cut on northeast corner of parapet coping, towpath side.

N. Y. 312.—Is near *Syracuse, Onondaga County, N. Y.*, on lock No. 50, copper plug, southeast hollow quoin between anchors, towpath lock.

N. Y. 313.—Is near *Belle Isle, Onondaga County, N. Y.*, on bridge No. 95, Gere's road bridge, copper plug, lower step, east wing, towpath abutment.

N. Y. 314.—Is at *Belle Isle, Onondaga County, N. Y.*, on bridge No. 96, Belle Isle road bridge, copper plug, lower step, west wing, towpath abutment.

N. Y. 315.—Is near *Amboy, Onondaga County, N. Y.*, on first culvert east Amboy road bridge, copper plug, west end of parapet coping, towpath side.

N. Y. 316.—Is near *Amboy, Onondaga County, N. Y.*, on bridge No. 97, Amboy road bridge, copper plug, lower step, west wing, towpath abutment.

N. Y. 317.—Is near *Amboy, Onondaga County, N. Y.*, on nine-mile creek aqueduct, copper plug, northwest corner of coping, east retaining wall, towpath side.

N. Y. 318.—Is near *Camillus, Onondaga County, N. Y.*, on culvert No. 58, square cut northeast corner of coping, east wall, first culvert east of Camillus road bridge, towpath side.

N. Y. 319.—Is near *Camillus, Onondaga County, N. Y.*, on bridge No. 98, Camillus road bridge, copper plug, lower step, west wing, towpath abutment.

N. Y. 320.—Is near *Warners, Onondaga County, N. Y.*, on bridge No. 99, New-port road bridge, copper plug, lower step, west wing, towpath abutment.

N. Y. 321.—U. S. G. S.—Is at *Warners, Onondaga County, N. Y.*, southwest corner of hotel barn, 30 feet north of canal, chisel mark on boulder.

N. Y. 322.—Is near *Memphis, Onondaga County, N. Y.*, on bridge No. 100, Memphis road bridge, copper plug, lower step, east wing, towpath abutment.

N. Y. 323.—Is three-fourths of a mile west of *Memphis, Onondaga County, N. Y.*, on culvert No. 59, copper plug, coping of buttress, west wing, towpath abutment.

N. Y. 324.—Is near *Memphis, Onondaga County, N. Y.*, on bridge No. 101, Peru road bridge, copper plug, lower step, west wing, towpath abutment.

N. Y. 325.—Is near *Memphis, Onondaga County, N. Y.*, on bridge No. 102, Shanty Point road bridge, copper plug, third step, east wing, towpath abutment.

N. Y. 326.—Is near *Jordan, Onondaga County, N. Y.*, on Carpenter Brook waste-weir, square cut on northeast corner of coping of west wall, towpath side.

N. Y. 327.—Is near *Jordan, Onondaga County, N. Y.*, at Jordan Cement Works, square cut on southeast corner of concrete foundation at end of railroad siding at back angle of towpath.

N. Y. 328.—Is at *Jordan, Onondaga County, N. Y.*, on bridge No. 103, Beaver street, copper plug, lower step, west wing, towpath abutment.

N. Y. 329.—Is at *Jordan, Onondaga County, N. Y.*, at Jordan Aqueduct, copper plug, coping of parapet, east wing, towpath side.

N. Y. 330.—Is at *Jordan, Onondaga County, N. Y.*, on bridge No. 104, Main street, copper plug, lower step, west wing, towpath abutment.

N. Y. 331.—Is at *Jordan, Onondaga County, N. Y.*, on bridge No. 105, Hamilton street, copper plug, lower step, east wing, towpath abutment.

N. Y. 332.—Is near *Jordan, Onondaga County, N. Y.*, on lock No. 51, copper plug, southeast hollow quoin, towpath lock.

N. Y. 333.—Is near *Jordan, Onondaga County, N. Y.*, on bridge No. 106, Cold Spring road bridge, copper plug, third step, west wing, towpath abutment.

N. Y. 334.—Is near *Weedsport, Cayuga County, N. Y.*, on bridge No. 107, Fountainville road bridge, copper plug, fourth step, east wing, towpath abutment.

N. Y. 335.—Is near *Weedsport, Cayuga County, N. Y.*, on bridge No. 108, Field's road bridge, copper plug, second step, east wing, towpath abutment.

N. Y. 336.—Is near *Weedsport, Cayuga County, N. Y.*, on West Shore Railroad bridge east of Weedsport, square cut on lower step, east wing, towpath abutment.

N. Y. 337.—Is near *Weedsport, Cayuga County, N. Y.*, on bridge No. 109, Putnam's farm bridge, copper plug, third step, east wing, towpath abutment.

N. Y. 338.—Is near *Weedsport, Cayuga County, N. Y.*, on bridge No. 110, Young's farm bridge, copper plug, second step, east wing, towpath abutment.

N. Y. 339.—Is near *Weedsport, Cayuga County, N. Y.*, on the Southern Central Railroad bridge, square cut on second step, east wing, towpath abutment.

N. Y. 340.—Is near *Weedsport, Cayuga County, N. Y.*, on Weedsport wastewear, copper plug in coping, east end of east wall of bulkhead.

N. Y. 341.—Is at *Weedsport, Cayuga County, N. Y.*, on bridge No. 111, Seneca street, copper plug, third step, east wing, towpath abutment.

N. Y. 342.—Is at *Weedsport, Cayuga County, N. Y.*, on bridge No. 112, Brutus street, copper plug, third step, east wing, towpath abutment.

N. Y. 343.—Is near *Weedsport, Cayuga County, N. Y.*, on West Shore Railroad bridge, square cut on lower step west wing, towpath abutment.

N. Y. 344.—Is near *Weedsport, Cayuga County, N. Y.*, on Centerport aqueduct, square cut on northeast corner of coping buttress, west wing, towpath side.

N. Y. 345.—Is near *Port Byron, Cayuga County, N. Y.*, on bridge No. 113, Centerport road bridge, square cut on fourth step, east wing, towpath abutment.

N. Y. 346.—Is at *Port Byron, Cayuga County, N. Y.*, on first culvert east of Utica street, square cut on northeast corner of coping, towpath side.

N. Y. 347.—Is at *Port Byron, Cayuga County, N. Y.*, on bridge No. 114, Utica street, copper plug, third step, east wing, towpath abutment.

N. Y. 348.—Is at *Port Byron, Cayuga County, N. Y.*, on bridge No. 115, Main street, copper plug, lower step, east wing, towpath abutment.

N. Y. 349.—Is at *Port Byron, Cayuga County, N. Y.*, on Port Byron aqueduct, copper plug, coping north buttress, east wing, towpath side.

N. Y. 350.—U. S. G. S.—Is at *Port Byron, Cayuga County, N. Y.*, on bridge No. 116, Owasco street, copper plug, fourth step, east wing, towpath abutment.

N. Y. 351 = U. S. G. S.—Is at *Port Byron, Cayuga County, N. Y.*, on bridge No. 117, Canal street, copper plug, second step, east wing, towpath abutment.

N. Y. 352 = U. S. G. S.—Is at *Port Byron, Cayuga County, N. Y.*, on lock No. 52, copper plug, fourth step from west end, north side of lock pier.

N. Y. 353.—Is near *Port Byron, Cayuga County, N. Y.*, on bridge No. 118, Hough-taling road bridge, copper plug, lower step, east wing, towpath abutment.

N. Y. 354.—Is near *Montezuma, Cayuga County, N. Y.*, on bridge No. 119, McLeod's road bridge, copper plug, second step, west wing, towpath abutment.

N. Y. 355.—Is near *Montezuma, Cayuga County, N. Y.*, on Crane Brook aqueduct, copper plug, coping parapet, end of west wing, towpath abutment.

N. Y. 356.—Is near *Montezuma, Cayuga County, N. Y.*, on bridge No. 120, Bucklin's farm bridge, square cut on third step, west wing, towpath abutment.

N. Y. 357.—Is at *Montezuma, Cayuga County, N. Y.*, on bridge No. 121, Salt street, copper plug, fourth step, west wing, towpath abutment.

N. Y. 358.—Is at *Montezuma, Cayuga County, N. Y.*, on bridge No. 122, Change bridge, copper plug, second step, west wing, towpath abutment.

N. Y. 359.—Is at *Montezuma, Cayuga County, N. Y.*, on bridge No. 123, Clark street, copper plug, third step, west wing, towpath abutment.

N. Y. 360.—Is at *Montezuma, Cayuga County, N. Y.*, on Seneca River aqueduct A 12, copper plug, coping parapet, east end, towpath side.

N. Y. 361.—Is at *Montezuma, Cayuga County, N. Y.*, on Seneca River aqueduct A 12, copper plug, coping parapet, west end, towpath side.

N. Y. 362.—Is near *Montezuma, Cayuga County, N. Y.*, on bridge No. 124, Mays Point road and Change bridge, copper plug, third step, west wing, south abutment.

N. Y. 363.—Is near *Montezuma, Cayuga County, N. Y.*, on bridge No. 124, Mays Point road and Change bridge, United States Geological Survey tablet set in third step, south abutment, west wing.

N. Y. 364.—Is near *Montezuma, Cayuga County, N. Y.*, on first culvert west of Mays Point bridge, square cut on southwest corner of coping, towpath abutment.

N. Y. 365.—Is near *Montezuma, Cayuga County, N. Y.*, on second culvert west of Mays Point bridge, copper plug, coping of parapet, towpath side.

N. Y. 366.—Is near *Montezuma, Cayuga County, N. Y.*, on bridge No. 1, western division, Wayne County line bridge, point cut on projection of fifth course of masonry below coping, near center, towpath abutment.

N. Y. 367.—Is near *Meadville, Wayne County, N. Y.*, and is square cut on southwest corner of coping of parapet, towpath side, culvert No. 1, western division.

N. Y. 368.—Is near *Meadville, Wayne County, N. Y.*, and is square cut on southwest corner of coping of parapet, towpath side, culvert No. 2, western division.

N. Y. 369.—Is near *Meadville, Wayne County, N. Y.*, and is square cut on coping of buttress, west wing, towpath abutment, bridge No. 2, Pittlock's road bridge.

N. Y. 370.—Is near *Meadville, Wayne County, N. Y.*, and is square cut on center of coping of parapet, towpath side, culvert No. 3, western division.

N. Y. 371.—Is near *Meadville, Wayne County, N. Y.*, and is square cut on southeast corner of coping of parapet, towpath side, culvert No. 4, western division.

N. Y. 372.—Is near *Clyde, Wayne County, N. Y.*, and is on southwest corner of parapet wall, culvert No. 5, western division, marked □ with chisel.

N. Y. 373.—Is near *Clyde, Wayne County, N. Y.*, and is on Waldruff's bridge, No. 3, towpath abutment, west wing, northwest corner, marked []

N. Y. 374.—Is near *Clyde, Wayne County, N. Y.*, on east wing of West Shore Railroad bridge, marked []

N. Y. 375.—Is near *Clyde, Wayne County, N. Y.*, on Dive culvert, towpath, on parapet wall, marked []

N. Y. 376.—Is at *Clyde, Wayne County, N. Y.*, on Glasgow street bridge No. 4, berme, on east wing, marked []

N. Y. 377.—Is at *Clyde, Wayne County, N. Y.*, on lock No. 53, berme, middle hollow quoin, marked []

N. Y. 378.—Is near *Clyde, Wayne County, N. Y.*, on Siegmund's bridge No. 6, towpath, on west wing, marked []

N. Y. 379.—Is near *Clyde, Wayne County, N. Y.*, on Baker's farm bridge, No. 7, towpath, on east wing, marked []

N. Y. 380.—Is near *Lock Berlin, Wayne County, N. Y.*, Long's farm bridge No 8, towpath on east wing, marked []

N. Y. 381.—Is near *Lock Berlin, Wayne County, N. Y.*, on Dive culvert, towpath, on parapet wall, marked []

N. Y. 382.—Is at *Lock Berlin, Wayne County, N. Y.*, on highway bridge No 9, towpath on east wing, marked []

N. Y. 383.—Is at *Lock Berlin, Wayne County, N. Y.*, No 54, berme, middle hollow quoin, marked []

N. Y. 384.—Is about 0.4 mile west of *Lock Berlin, Wayne County, N. Y.*, at Horton's bridge, No. 10, berme, on east wing, marked []

N. Y. 385.—Is near *Lock Berlin, Wayne County, N. Y.*, on Goetzman's farm bridge, No. 11, berme, on east wing, marked []

N. Y. 386.—Is near *Lock Berlin, Wayne County, N. Y.*, on Kiaus's highway bridge, No. 12, towpath, on west wing, marked []

N. Y. 387.—Is near *Lyons, Wayne County, N. Y.*, on Richmond's farm bridge, No. 13, berme, on west wing, marked []

N. Y. 388.—Is near *Lyons, Wayne County, N. Y.*, on Cole's highway bridge, No. 14, towpath, on west wing, marked []

N. Y. 389.—Is at *Lyons, Wayne County, N. Y.*, on Geneva street bridge, No. 15, towpath, on west wing, marked []

N. Y. 390.—Is at *Lyons, Wayne County, N. Y.*, on Montezuma street bridge, No. 16, towpath, on west wing, marked []

N. Y. 391.—Is at *Lyons, Wayne County, N. Y.*, on Water street bridge, No. 17, towpath, on east wing, marked []

N. Y. 392.—Is at *Lyons, Wayne County, N. Y.*, at lock No. 55, berme, on middle hollow quoin, marked []

N. Y. 393.—Is at *Lyons, Wayne County, N. Y.*, at Mud Creek aqueduct, towpath, west wing, on buttress, marked []

N. Y. 394.—Is near *Lyons, Wayne County, N. Y.*, on Prime's farm bridge, No. 19, berme, on west wing, marked []

N. Y. 395.—Is near *Lyons, Wayne County, N. Y.*, on Park's highway bridge No. 20, towpath, on east wing, marked []

N. Y. 396.—Is near *Lyons, Wayne County, N. Y.*, on Poorhouse lock No. 56, berme, on middle hollow quoin, marked []

N. Y. 397.—Is near *Lyons, Wayne County, N. Y.*, Mosher's highway bridge No. 21, towpath on west wing, marked []

N. Y. 398.—Is near *Lyons, Wayne County, N. Y.*, on Dive culvert, towpath, on parapet wall, marked []

N. Y. 399.—Is near *Newark, Wayne County, N. Y.*, on N. Y. C. R. R. bridge, east wing, lower step, marked []

N. Y. 400.—Is near *Newark, Wayne County, N. Y.*, on Dive culvert, towpath, on center parapet wall, marked []

N. Y. 401.—Is at *Newark, Wayne County, N. Y.*, on Lockville lock No. 57, berme, on east hollow quoin, marked []

N. Y. 402.—Is at *Newark, Wayne County, N. Y.*, on Middle Lockville lock No. 58, berme, on east hollow quoin, marked []

N. Y. 403.—Is at *Newark, Wayne County, N. Y.*, on Upper Lockville lock No. 59, berme, on east hollow quoin, marked []

N. Y. 404.—Is at *Newark, Wayne County, N. Y.*, on Charles street bridge No. 24, towpath, on east wing, marked []

U. S. G. S.—Is at *Newark, Wayne County, N. Y.*, on Newark Baptist Church, corner Charles and Miller streets, tablet in water table, marked 457 OSWGO.

N. Y. 405.—Is at *Newark, Wayne County, N. Y.*, on waste weir, towpath, middle parapet wall, marked []

N. Y. 406.—Is near *Newark, Wayne County, N. Y.*, on Allerton's highway bridge No. 26, towpath, on east wing, marked []

N. Y. 407.—Is near *Newark, Wayne County, N. Y.*, on Peck's highway bridge No. 27, towpath, on west wing, marked []

N. Y. 408.—Is near *Port Gibson, Wayne County, N. Y.*, on Swezey's farm bridge No. 28, towpath, east wing, first course below coping, marked ○.

N. Y. 409.—Is near *Port Gibson, Wayne County, N. Y.*, on Palmer's farm bridge No. 29, towpath, on east wing, marked []

N. Y. 410.—Is at *Port Gibson, Wayne County, N. Y.*, on Port Gibson bridge No. 30, towpath, on west wing, marked []

N. Y. 411.—Is near *Palmyra, Wayne County, N. Y.*, on Galloway's highway bridge No. 31, towpath, east wing, on lower step, marked []

N. Y. 412.—Is at *Palmyra, Wayne County, N. Y.*, on Kent street bridge No. 31½, berme, on west wing, on second lower step, marked []

N. Y. 413.—Is at *Palmyra, Wayne County, N. Y.*, on Railroad avenue bridge No. 32, berme, on west wing, marked []

N. Y. 414.—Is at *Palmyra, Wayne County, N. Y.*, on Church street bridge No. 34, towpath, on east wing, lower step, marked []

N. Y. 415.—Is at *Palmyra, Wayne County, N. Y.*, on Change bridge No. 35, towpath, east wing, north side, marked []

N. Y. 416.—Is near *Palmyra, Wayne County, N. Y.*, on Mud Creek aqueduct, towpath, west wing, on buttress, marked []

U. S. G. S.—Is near *Palmyra, Wayne County, N. Y.*, on Mud Creek aqueduct, towpath, west wing, on buttress, copper tablet, marked 446 feet.

N. Y. 417.—Is near *Palmyra, Wayne County, N. Y.*, on Crandell's highway bridge No. 36, towpath, on east wing, marked []

N. Y. 418.—Is near *Macedon, Wayne County, N. Y.*, on Clark's farm bridge No. 37, towpath, east wing, lower step, marked []

N. Y. 419.—Is at *Macedon, Wayne County, N. Y.*, on lock No. 60, berme, on middle hollow quoin, marked []

N. Y. 420.—Is at *Macedon, Wayne County, N. Y.*, on lock No. 61, berme, on middle hollow quoin, marked []

N. Y. 421.—Is near *Macedon, Wayne County, N. Y.*, on Frear's highway bridge No. 41, towpath, on west wing, marked []

N. Y. 422.—Is at *Wayneport, Wayne County, N. Y.*, on Highway bridge No. 42, towpath, on west wing, marked []

N. Y. 423.—Is near *Fairport, Monroe County, N. Y.*, on Knappsville highway bridge No. 43, towpath, on east wing, marked []

N. Y. 424.—Is near *Fairport, Monroe County, N. Y.*, on Thomas Creek culvert No. 26, towpath, on center parapet, marked []

N. Y. 425.—Is near *Fairport, Monroe County, N. Y.*, on Baker's highway bridge No. 44, towpath, on east wing, marked []

N. Y. 426.—Is at *Fairport, Monroe County, N. Y.*, on waste weir, towpath, middle parapet wall, marked []

N. Y. 427.—Is near *Fairport, Monroe County, N. Y.*, on Fullman's basin bridge No. 47, towpath, on east wing, marked []

N. Y. 428.—Is near *Fairport, Monroe County, N. Y.*, on Pipe culvert No. 27, towpath, middle parapet wall, marked []

N. Y. 429.—Is near *Fairport, Monroe County, N. Y.*, on Wapping's highway bridge No. 48, towpath, on east wing, marked []

N. Y. 430.—Is near *Fairport, Monroe County, N. Y.*, on Wiltsie's highway bridge No. 49, berme, on east wing, marked []

N. Y. 431.—Is near *Bushnell Basin, Monroe County, N. Y.*, on stop gate, towpath, on east end recess coping, marked []

N. Y. 432.—U. S. G. S.—Is near *Bushnell Basin, Monroe County, N. Y.*, on Bushnell's basin bridge No. 50, towpath, inner face of west wing, copper tablet, marked "OSWGO 465 ft."

N. Y. 433.—Is near *Bushnell Basin, Monroe County, N. Y.*, on Cartersville bridge No. 51, towpath, middle abutment, inner face, fifth course below coping, marked "O."

N. Y. 434.—Is near *Pittsford, Monroe County, N. Y.*, on Guernsey's bridge No. 52, towpath, abutment, fifth course below coping, projecting stone, marked "O."

N. Y. 435.—Is at *Pittsford, Monroe County, N. Y.*, on highway bridge No. 53, towpath, on east wing, marked []

N. Y. 436.—Is at *Pittsford, Monroe County, N. Y.*, on Main street bridge No. 54, middle towpath abutment, fifth course below coping, projecting stone, marked "O."

N. Y. 437.—Is near *Pittsford, Monroe County, N. Y.*, on Sutherland's highway bridge No. 55, towpath, on east wing, marked []

N. Y. 438.—Is near *Pittsford, Monroe County, N. Y.*, on culvert No. 33, towpath, middle parapet wall, marked []

N. Y. 439.—Is near *Pittsford, Monroe County, N. Y.*, on culvert No. 34, towpath, middle parapet wall, marked []

N. Y. 440.—Is near *Pittsford, Monroe County, N. Y.*, on Cook's highway bridge No. 56, towpath, east wing, marked []

N. Y. 441.—Is near *Pittsford, Monroe County, N. Y.*, on Lock No. 62, berme, on middle hollow quoin, marked []

N. Y. 442.—Is near *Brighton, Monroe County, N. Y.*, on Weed's bridge No. 57, towpath, on east wing, marked []

N. Y. 443.—Is near *Brighton, Monroe County, N. Y.*, on Billingham's bridge No. 58, towpath, on east wing, marked []

N. Y. 444.—Is near *Brighton, Monroe County, N. Y.*, on Donely's bridge No. 59, towpath, on east wing, marked []

N. Y. 445.—Is near *Brighton, Monroe County, N. Y.*, on Drake's bridge No. 60, towpath, on east wing, marked []

N. Y. 446.—Is at *Brighton, Monroe County, N. Y.*, on Miller's Lock No. 63, berme, on middle hollow quoin, marked []

N. Y. 447.—Is at *Brighton, Monroe County, N. Y.*, on Sipple's Lock No. 64, berme, on middle hollow quoin (center stone), not marked.

N. Y. 448.—Is near *Rochester, Monroe County, N. Y.*, on Lock No. 65, berme, on middle hollow quoin, marked []

N. Y. 449.—Is at *Rochester, Monroe County, N. Y.*, on Culver street bridge No. 62, towpath, on east wing, marked []

N. Y. 450.—Is at *Rochester, Monroe County, N. Y.*, on Lock No. 66, berme, on middle hollow quoin, marked []

N. Y. 451.—Is at *Rochester, Monroe County, N. Y.*, on Goodman street bridge No. 64, towpath, on east wing, marked []

N. Y. 452.—Is at *Rochester, Monroe County, N. Y.*, on Averill avenue bridge No. 66, towpath, on east wing, marked []

N. Y. 453.—Is at *Rochester, Monroe County, N. Y.*, on weigh lock, east end pier, near snubbing post, marked []

N. Y. 454.—Is at *Rochester, Monroe County, N. Y.*, on Ford street bridge No. 78, east end towpath abutment, on third step, marked []

N. Y. 455.—Is at *Rochester, Monroe County, N. Y.*, on Niagara Falls Railroad bridge, towpath, east end, on first step, marked []

N. Y. 456.—Is at *Rochester, Monroe County, N. Y.*, on Emerson street bridge No. 85, towpath, parapet wall on west end, marked []

N. Y. 457 = U. S. G. S.—Is at *Rochester, Monroe County, N. Y.*, on Rowe street bridge No. 86, towpath, foundation under east tower, marked []

N. Y. 458.—Is near *Rochester, Monroe County, N. Y.*, on Scott's bridge No. 88, towpath, on east wing, marked []

N. Y. 459.—Is near *Rochester, Monroe County, N. Y.*, on Four Mile Grocery bridge No. 89, towpath, on east wing, marked []

N. Y. 460.—Is near *South Greece, Monroe County, N. Y.*, on Spier's bridge No. 90, towpath abutment, west wing face, corner of coping, marked [] with a chisel.

N. Y. 461.—Is near *South Greece, Monroe County, N. Y.*, on Douglass's farm bridge No. 92, towpath abutment, west wing, near face corner, marked [] with a chisel.

N. Y. 462.—Is at *South Greece, Monroe County, N. Y.*, on Findlay's bridge No. 93, east wing, near face corner, berme abutment, marked [] with a chisel.

N. Y. 463.—Is near *South Greece, Monroe County, N. Y.*, on Cromwell's bridge No. 95, towpath abutment, east wing, near center of coping stone, marked [] with a chisel.

N. Y. 464.—Is near *Spencerport, Monroe County, N. Y.*, on Hiscock's bridge No. 96, towpath abutment, east wing, near center of coping stone, marked [] with a chisel.

N. Y. 465.—Is near *Spencerport, Monroe County, N. Y.*, on Norman's farm bridge No. 97, towpath abutment, west wing, near center coping stone, marked [] with paint.

N. Y. 466.—Is at *Spencerport, Monroe County, N. Y.*, on Amity street bridge No. 99, towpath abutment, west wing, near center bottom step, marked [] with a chisel.

N. Y. 467.—U. S. G. S.—Is at *Spencerport, Monroe County, N. Y.*, Amity street bridge No. 99, bronze tablet in center of abutment, facing towpath and canal, marked "514 B."

N. Y. 468.—Is near *Spencerport, Monroe County, N. Y.*, on Webster's bridge No. 101, towpath abutment, east wing, center of bottom step, marked [] with a chisel.

N. Y. 469.—Is near *Spencerport, Monroe County, N. Y.*, on Cressy's bridge No. 102, towpath abutment, west wing, marked [] with a chisel.

N. Y. 470.—Is near *Spencerport, Monroe County, N. Y.*, on Adams's Basin bridge No. 103, towpath abutment, east wing, marked [] with a chisel.

N. Y. 471.—Is near *Brockport, Monroe County, N. Y.*, on Doty's bridge No. 104, berme abutment, east wing, coping, marked [] with a chisel.

N. Y. 472.—Is near *Brockport, Monroe County, N. Y.*, culvert No. 55, towpath, parapet, marked [] on coping.

N. Y. 473.—Is near *Brockport, Monroe County, N. Y.*, on Brockway's bridge No. 105, towpath abutment, west wing, marked [] with a chisel.

N. Y. 474.—Is near *Brockport, Monroe County, N. Y.*, on Cooley's Basin bridge No. 106, towpath abutment, east wing, third course, marked [] with a chisel.

N. Y. 475.—U. S. G. S.—Is at *Brockport, Monroe County, N. Y.*, on Mechanic street bridge No. 107, towpath abutment, east wing, lower step, marked [] with a chisel.

N. Y. 476.—Is at *Brockport, Monroe County, N. Y.*, on Smith street bridge No. 109, towpath abutment, east wing, on lower step, marked [] with a chisel.

N. Y. 477.—Is at *Brockport, Monroe County, N. Y.*, on waste weir, abutment, on east pier, marked [] with a chisel.

N. Y. 478.—Is near *Brockport, Monroe County, N. Y.*, on Danforth's bridge No. 110, towpath abutment, east wing, coping, marked [] with a chisel.

N. Y. 479.—Is near *Holley, Monroe County, N. Y.*, on Miner's bridge No. 111, east wing, towpath, on offset, marked [] with a chisel.

N. Y. 480.—Is near *Holley, Orleans County, N. Y.*, on Orr's bridge No. 113, west wing, towpath abutment, marked [] with a chisel.

N. Y. 481.—Is at *Holley, Orleans County, N. Y.*, on Main street bridge No. 115, east wing, towpath abutment, marked [] with red paint.

N. Y. 482.—Is near *Holley, Orleans County, N. Y.*, on Tuttle's bridge No. 117, east wing, towpath abutment, marked [] with chisel and red paint.

N. Y. 483.—Is at *Hulberton, Orleans County, N. Y.*, on bridge No. 119, east wing, towpath abutment, marked [] with a chisel.

N. Y. 484.—Is near *Hulberton, Orleans County, N. Y.*, on Brockville bridge No. 120, east wing, towpath abutment, marked [] with a chisel.

N. Y. 485.—Is near *Hulberton, Orleans County, N. Y.*, on Hindsburg bridge No. 121, east wing, towpath abutment, marked [] with chisel and red paint.

N. Y. 486.—Is near *Albion, Orleans County, N. Y.*, on Jacqueth's bridge No. 123, east wing, towpath abutment, marked [] with chisel and O with red paint.

N. Y. 487.—Is near *Albion, Orleans County, N. Y.*, on Brailey's bridge No. 125, west wing, towpath abutment, marked [] with a chisel.

N. Y. 488.—Is at *Albion, Orleans County, N. Y.*, on Ingersoll street bridge No. 127, towpath abutment, east wing, on lower step, marked [] with a chisel.

N. Y. 489.—Is near *Albion, Orleans County, N. Y.*, on Lattin's bridge No. 129, west wing, towpath abutment, marked [] with a chisel.

N. Y. 490.—Is near *Albion, Orleans County, N. Y.*, on Gaines Basin bridge No. 130, west wing, towpath abutment, on lower step, marked [] with a chisel.

N. Y. 491.—Is at *Eagle Harbor, Orleans County, N. Y.*, on Eagle Harbor bridge No. 131, towpath abutment, east wing, lower step, marked [] with a chisel.

N. Y. 492=U. S. G. S.—Is at *Eagle Harbor, Orleans County, N. Y.*, on Eagle Harbor bridge No. 131, towpath abutment, east wing, lower step, copper bolt, marked U. S. G. S. B. M. 516 feet.

N. Y. 493.—Is near *Eagle Harbor, Orleans County, N. Y.*, on Starkweather's farm bridge No. 132, towpath, east wing, marked [] with chisel.

N. Y. 494.—Is near *Knowlesville, Orleans County, N. Y.*, on Long's bridge No. 134, east wing, towpath abutment, face corner, marked [] with chisel.

N. Y. 495.—Is near *Knowlesville, Orleans County, N. Y.*, on dive culvert No. 91, towpath parapet, marked []

N. Y. 496.—Is near *Knowlesville, Orleans County, N. Y.*, on Knowlesville bridge No. 135, west wing, towpath abutment, second lower step, marked [] with a chisel.

N. Y. 497.—Is near *Knowlesville, Orleans County, N. Y.*, on Knowlesville stop gate, east abutment, towpath side, marked []

N. Y. 498.—Is near *Medina, Orleans County, N. Y.*, on Beal's bridge, towpath abutment, east wing, marked [] with a chisel.

N. Y. 499.—Is near *Medina, Orleans County, N. Y.*, on Hastings's bridge No. 137, west wing, towpath abutment, on corner coping, marked [] with a chisel.

N. Y. 500.—Is at *Medina, Orleans County, N. Y.*, on Holloway's bridge No. 138, east wing, towpath abutment, marked [] around anchor bolt.

N. Y. 501.—Is at *Medina, Orleans County, N. Y.*, on Medina aqueduct, west buttress, on the northwest corner, marked [] with a chisel.

N. Y. 502.—Is at *Medina, Orleans County, N. Y.*, on Church street bridge No. 139, east wing, towpath abutment, marked [] around anchor bolt.

N. Y. 503=U. S. G. S.—Is at *Medina, Orleans County, N. Y.*, on Prospect street bridge No. 140½, east wing, towpath abutment, copper bolt, marked U. S. G. S. B. M.

N. Y. 504.—Is near *Medina, Orleans County, N. Y.*, on old stop gate, east end of towpath abutment, marked [] with red paint.

N. Y. 505.—Is near *Medina, Orleans County, N. Y.*, on dive culvert No. 100, on towpath parapet, marked []

N. Y. 506.—Is near *Medina, Orleans County, N. Y.*, on Jackson's bridge No. 141, west wing, towpath abutment, marked [] with a chisel.

- N. Y. 507.—Is near *Medina, Orleans County, N. Y.*, on Shelby Basin bridge No. 142, east wing, towpath abutment, marked [] with a chisel.
- N. Y. 508.—Is near *Middleport, Niagara County, N. Y.*, on Gorman's bridge No. 143, east wing, towpath abutment, marked [] with a chisel.
- N. Y. 509.—Is near *Middleport, Niagara County, N. Y.*, on dive culvert No. 104, on center of towpath parapet, marked [] with a chisel.
- N. Y. 510.—Is at *Middleport, Niagara County, N. Y.*, on Main street bridge No. 145, west wing, towpath abutment, on lower step, marked [] with chisel.
- N. Y. 511.—Is near *Middleport, Niagara County, N. Y.*, on dive culvert No. 108, on towpath parapet, end of coping, marked [] with chisel.
- N. Y. 512.—Is near *Middleport, Niagara County, N. Y.*, on Watson's bridge No. 147, west wing, towpath abutment, marked [] with a chisel.
- N. Y. 513.—Is near *Middleport, Niagara County, N. Y.*, on Hurd's bridge No. 148, east wing, towpath abutment, marked [] around anchor bolt.
- N. Y. 514.—Is near *Gasport, Niagara County, N. Y.*, on Reynolds Basin bridge No. 149, east wing, towpath abutment, lower step, marked [] with a chisel.
- N. Y. 515.—Is at *Gasport, Niagara County, N. Y.*, on dive culvert No. 114, towpath parapet, marked [] with chisel.
- N. Y. 516.—Is at *Gasport, Niagara County, N. Y.*, on dive culvert No. 115, towpath parapet, marked [] with chisel.
- N. Y. 517.—Is near *Gasport, Niagara County, N. Y.*, on Orangeport bridge No. 152, west wing, towpath abutment, marked [] with chisel.
- N. Y. 518.—Is near *Gasport, Niagara County, N. Y.*, on dive culvert No. 116, towpath parapet, marked [] with chisel.
- N. Y. 519.—Is near *Gasport, Niagara County, N. Y.*, on dive culvert No. 117, towpath parapet, marked [] with chisel.
- N. Y. 520.—Is near *Gasport, Niagara County, N. Y.*, on Millard's bridge No. 153, east wing, towpath abutment, marked [] with paint.
- N. Y. 521.—Is near *Lockport, Niagara County, N. Y.*, on Wakeman's bridge No. 154, west wing, towpath abutment, on coping, marked [] with paint.
- N. Y. 522.—Is near *Lockport, Niagara County, N. Y.*, on Young's bridge No. 155, west wing, towpath abutment, on coping, marked [] with paint.
- N. Y. 523.—Is at *Lockport, Niagara County, N. Y.*, on New York Central and Hudson River Railroad bridge (lower town branch), towpath abutment, east end, rear corner, marked [] with chisel.
- N. Y. 524.—Is at *Lockport, Niagara County, N. Y.*, on Adams street bridge No. 157, towpath abutment, east wing, lower step, marked [] with chisel.
- N. Y. 525.—Is at *Lockport, Niagara County, N. Y.*, on Cady street bridge No. 160, west wing, towpath abutment, first lower step, marked [] with chisel.
- N. Y. 526.—Is at *Lockport, Niagara County, N. Y.*, on lock 67, towpath, first lower step, marked [] with chisel.
- N. Y. 527.—Is at *Lockport, Niagara County, N. Y.*, on lock 71, east berme, hollow quoin, marked [] with chisel.
- N. Y. 528.—Is near *Lockport, Niagara County, N. Y.*, 200 feet east of bridge No. 165, iron ringholt at northeast corner of plank towpath bridge over horse hole.

N. Y. 529.—Is near *Lockport, Niagara County, N. Y.*, on stone wall marked [] with paint and improvement bench mark No. 13½.

N. Y. 530.—Is near *Lockport, Niagara County, N. Y.*, on Hawley's bridge No. 167, towpath abutment, west end of pier, on first course of stone, marked [] with chisel.

N. Y. 531.—Is near *Pendleton, Niagara County, N. Y.*, on Sulphur Springs guard lock, 1.5 miles east of Pendleton, east berme, hollow quoin, marked [] with chisel.

N. Y. 532.—Is at *Pendleton, Niagara County, N. Y.*, on Pendleton Change bridge No. 169, berme side, east wing, east end of lower step, marked [] with chisel.

N. Y. 533.—Is near *Pendleton, Niagara County, N. Y.*, on highway bridge over Black Creek, west abutment, northwest wing, marked [] with chisel.

N. Y. 534.—Is near *Pendleton, Niagara County, N. Y.*, on New Home bridge No. 173, towpath abutment, west wing, corner, first lower step, marked [] with chisel.

N. Y. 535.—Is near *Pendleton, Niagara County, N. Y.*, on Pickard's bridge No. 174, towpath, on face of abutment, near west end, marked [] with chisel.

N. Y. 536.—Is near *Pendleton, Niagara County, N. Y.*, on Stone road culvert, northeast corner, marked [] with chisel.

N. Y. 537.—Is near *Tonawanda, Erie County, N. Y.*, on Bush's bridge No. 175, on face of towpath abutment, marked [] with chisel and paint.

N. Y. 538.—Is at *Tonawanda, Erie County, N. Y.*, on Erie Railroad bridge, towpath abutment, west wing, first lower step, marked [] with chisel.

N. Y. 539.—Tonawanda 2.—Is at *Tonawanda, Erie County, N. Y.* (See p. 656.)

N. Y. 540.—Is at *Tonawanda, Erie County, N. Y.*, on Bouck street bridge No. 180, towpath abutment, west wing, marked [] with chisel.

N. Y. 541.—Is near *Tonawanda, Erie County, N. Y.*, at Tonawanda Change bridge, No. 182, towpath abutment, first coping stone, marked [] with chisel.

N. Y. 542.—Is near *Tonawanda, Erie County, N. Y.*, on Three Mile bridge No. 183, east wing, towpath abutment, marked [] with chisel.

N. Y. 543.—Is near *Tonawanda, Erie County, N. Y.*, on Cherry's bridge No. 184, towpath, west wing, rear of abutment, second course below coping, marked [] with chisel and U. S. B. M. 218 with paint.

N. Y. 544.—Is near *Tonawanda, Erie County, N. Y.*, on Spies bridge No. 185, towpath abutment, east wing marked [] with chisel and U. S. B. M. 216 with paint.

N. Y. 545.—Is near *Buffalo, Erie County, N. Y.*, at Grand Island Ferry (Scott's bridge No. 186), west wing, towpath abutment, marked [] with chisel and U. S. B. M. with paint.

N. Y. 546.—Is near *Buffalo, Erie County, N. Y.*, on Change bridge No. 187, 0.97 mile east of International bridge, towpath, south side of west wing, marked [] with chisel and U. S. B. M. No. 9 with paint.

N. Y. 548.—Is at *Buffalo, Erie County, N. Y.*, on International bridge, towpath, on face of abutment, marked [] with chisel and U. S. B. M. No. 7 with paint.

N. Y. 549.—Is at *Buffalo, Erie County, N. Y.*, on Ferry street bridge No. 194, towpath abutment, west wing, marked [] with chisel and U. S. B. M. No. 6 with paint.

N. Y. 550.—Is at *Buffalo, Erie County, N. Y.*, on Porter avenue bridge No. 196, towpath, on face of abutment, bottom course, between fourth and fifth arch ribs, marked [] with chisel.

N. Y. 551.—Is at *Buffalo, Erie County, N. Y.*, on Hudson street bridge No. 196½, towpath abutment, south wing, first lower step, marked [] with chisel and U. S. B. M. No. 211 with paint.

N. Y. 552.—Is at *Buffalo, Erie County, N. Y.*, on Commercial street bridge No. 204, towpath abutment, north wing, second lower step, marked [] with chisel.

L. H.—Is at *Buffalo, Erie County, N. Y.* (See p. 658.)

N. Y. 554 = D. W. Lockport 1.—Is near *Lockport, Niagara County, N. Y.* (See p. 659.)

PERMANENT BENCH MARKS BETWEEN PHOENIX AND CLYDE, N. Y.

(See Report of New York State Engineer and Surveyor, 1901, pp. 697, 698.)

N. Y. 53 = D. W. Phoenix.—Is at *Phoenix, Oswego County, N. Y.* (See p. 676.)

N. Y. 54.—Is at *Phoenix, Oswego County, N. Y.*, and is a copper plug on coping of guard lock No. 1, between straps, on the southeastern hollow quoin.

N. Y. 55.—Is at *Three River Point, Onondaga County, N. Y.*, and is a copper plug in step on east wing, north abutment of bridge over Oneida River.

N. Y. 56.—Is at *Belgium, Onondaga County, N. Y.*, and is a copper plug in door sill of brick building, 50 feet north of the east wing of highway bridge over Seneca River.

N. Y. 57.—Is near *Belgium, Onondaga County, N. Y.*, and is a nail in the root of a 20-inch elm tree on property of Henry Lacey, 350 feet from Italian shanty, and 550 feet from place where ditch running into Seneca River crosses division line between lands of Henry Lacey and Luke Collins.

N. Y. 58.—Is near *Belgium, Onondaga County, N. Y.*, and is nail in root of elm tree located 220 feet from the dwelling of John Doyle, at foot of bluff on flats south side of Seneca River, 1½ miles below Cold Spring bridge.

N. Y. 59.—Is near *Baldwinsville, Onondaga County, N. Y.*, and is the highest point on stone monument, about 725 feet above Cold Spring bridge, on the left bank of Seneca River.

N. Y. 60.—Is near *Baldwinsville, Onondaga County, N. Y.*, and is nail in root of oak tree, about 40 feet west of wire fence, on property of Jay B. Klein, about 600 feet above Cold Spring bridge.

N. Y. 61.—Is near *Baldwinsville, Onondaga County, N. Y.*, and is nail in root of 16-inch elm tree on back angle of towpath on property of Jay B. Klein, 5 feet from wire fence, about 1500 feet west of division line between properties of Alonzo Wagner and J. B. Klein.

N. Y. 62.—Is near *Baldwinsville, Onondaga County, N. Y.*, and is nail in root of 16-inch poplar, 170 feet east of bridge over small creek, and 350 feet from division line between properties of Harriet and Elmer Dixon and E. I. Bisdie, and on the property of E. I. Bisdie.

N. Y. 63.—Is near *Baldwinsville, Onondaga County, N. Y.*, and is nail in root of 10-inch ash tree on left bank of Seneca River, 300 feet from division line between properties of W. S. Names and Curtis Names, on property of W. S. Names, about 1200 feet above Delaware, Lackawanna and Western Railroad bridge.

N. Y. 64.—Is near *Baldwinsville, Onondaga County, N. Y.*, and is point on stone monument, near slaughterhouse, about 700 feet below lock in Baldwinsville side-cut canal.

N. Y. 65.—Is near *Baldwinsville, Onondaga County, N. Y.*, and is point cut in coping on the south side of last stone on the west end of wall at the north end of Baldwinsville dam.

N. Y. 66.—Is near *Baldwinsville, Onondaga County, N. Y.*, and is a nail in root of elm tree on property of Otis M. Bigelow, one-half mile from Baldwinsville post-office, on the north river bank.

N. Y. 67.—Is near *Baldwinsville, Onondaga County, N. Y.*, and is the highest point on boulder on top of river bank, on property of Mrs. Jennie M. Adsit, 550 feet from farm house and 420 feet from highway.

N. Y. 68.—Is near *Baldwinsville, Onondaga County, N. Y.*, and is mark cut on boulder 200 feet from water's edge, 15 feet from angle in rail fence between properties of Judson Maerfield and Hannah Butler, on Maerfield property.

N. Y. 69.—Is near *Baldwinsville, Onondaga County, N. Y.*, and is nail in root of elm tree, 5 feet from river, on the property of Adelbert and Frank Fowler 1 075 feet from west line and 1 100 feet from their east property line, about 4 miles above Baldwinsville, opposite property of Seneca River Brick Company.

N. Y. 70.—Is near *Plainville, Onondaga County, N. Y.*, and is nail in root of chestnut tree on land of D. E. Voorheese, 500 feet from his east line and 2 000 feet from his west line.

N. Y. 71.—Is about $1\frac{1}{2}$ miles south of *Plainville, Onondaga County, N. Y.*, and is nail in root of 13-inch elm in the north edge of woods on property of David Tillison.

N. Y. 72.—Is near *Plainville, Onondaga County, N. Y.*, and is nail in root of stump beside 15-inch oak tree on top of river bank in edge of woods and at end of rail fence, on the property of Emerson Gates, about 1 500 feet north of highway bridge over State ditch at Jacks Reef.

N. Y. 73.—Is near *Plainville, Onondaga County, N. Y.*, and is nail in root of hickory tree on east side of road 125 feet south of the east end of Jacks Reef River bridge.

N. Y. 74.—Is near *Plainville, Onondaga County, N. Y.*, and is nail in root of large hickory tree on shore of Seneca River, at the beginning of lane along river on property of R. Graves, about opposite upper end of State ditch.

N. Y. 75.—Is near *Plainville, Onondaga County, N. Y.*, and is nail in root of large hickory tree on shore of Cross Lake, 1 200 feet south of outlet near high-water mark on property of W. T. Stephens.

N. Y. 76.—Is near *Weedsport, Cayuga County, N. Y.*, and is nail in root of 10-inch maple stump on south shore of Cross Lake in woods, 1 100 feet west of lane to boat-house on land of Mrs. Brotton.

N. Y. 77.—Is near *Weedsport, Cayuga County, N. Y.*, and is point cut on northeast corner of coping stone, south abutment, iron bridge over Seneca River, about three-fourths mile up stream from Cross Lake.

N. Y. 78.—Is near *Weedsport, Cayuga County, N. Y.*, and is nail in root of 3-foot elm 50 feet north of Skaneateles Creek, about 1 500 feet east of Bonta's Bridge over Seneca River, on property of J. A. Clements.

N. Y. 80.—Is near *Weedsport, Cayuga County, N. Y.*, and is point cut on bridge seat on east side of south abutment of river bridge on highway directly north of Weedsport.

N. Y. 81.—Is near *Port Byron, Cayuga County, N. Y.*, and is nail in root of willow tree just west of clubhouse known as Casey's, and about 10 feet away.

N. Y. 82.—Is near *Port Byron, Cayuga County, N. Y.*, and is a mark cut on east corner, south abutment, bridge seat of Free Bridge across Seneca River, about $1\frac{1}{2}$ miles north of New York Central & Hudson River Railroad station.

N. Y. 83.—Is about two miles north of *Port Byron, Cayuga County, N. Y.*, and is a point cut on bridge seat at east angle south of abutment Mosquito Point bridge over Seneca River.

N. Y. 84.—Is near *Port Byron, Cayuga County, N. Y.*, and is nail in root of maple tree, about 200 feet from river and 570 feet west of lower bridge to Howland's Island.

N. Y. 85.—Is at *Fox Ridge, Cayuga County, N. Y.*, and is a point cut on large boulder at the roadside just south of New York Central depot, and about 10 feet from wire fence.

N. Y. 86.—Is near *Fox Ridge, Cayuga County, N. Y.*, and is point cut on north-east pedestal stone of water-tank foundation at New York Central water station No. 39, Seneca River, about 100 feet west of bridge over Seneca River.

N. Y. 87.—Is about one-half mile east of *Savannah, Wayne County, N. Y.*, and is highest point on rail driven into ground at base and in front of New York Central mile post, N. Y. 322, Buffalo, 118.

N. Y. 88.—Is about three-fourths of a mile west of *Savannah, Wayne County, N. Y.*, and is point cut on face of stone in east end, lower course, north abutment of highway bridge over New York Central Railroad.

N. Y. 89.—Is about 2 miles west of *Savannah, Wayne County, N. Y.*, and is point cut on northwest corner of bridge seat of West Shore Railroad bridge over Crusoe Creek.

N. Y. 90.—Is about 1.8 miles east of *Clyde, Wayne County, N. Y.*, and is point cut on back of lower step, towpath abutment, north wing of New York Central Railroad bridge over Erie Canal.

N. Y. 91 = N. Y. 372.—Is near *Clyde, Wayne County, N. Y.* (See p. 694.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN SYRACUSE AND PHOENIX.

(See Report of New York State Engineer and Surveyor, 1901, p. 693.)

N. Y. 300.—Is at *Syracuse, Onondaga County, N. Y.* (See p. 694.)

N. Y. 1.—Is at *Syracuse, Onondaga County, N. Y.*, on Willow street bridge, copper plug, third step, south wing, towpath abutment.

N. Y. 2.—Is at *Syracuse, Onondaga County, N. Y.*, on Division street bridge, copper plug, third step, south wing, towpath abutment.

N. Y. 3.—Is at *Syracuse, Onondaga County, N. Y.*, on Bear street bridge, copper plug, first step, south wing, towpath abutment.

N. Y. 4.—Is near *Syracuse, Onondaga County, N. Y.*, on lock No. 1, copper plug, northeast lower berme hollow quoin.

N. Y. 5.—Is near *Syracuse, Onondaga County, N. Y.*, on lock No. 2, copper plug, southeast upper towpath hollow quoin.

N. Y. 6.—Is near *Syracuse, Onondaga County, N. Y.*, on lock No. 3, copper plug, northeast lower towpath hollow quoin.

N. Y. 7.—Is near *Syracuse, Onondaga County, N. Y.*, on Change bridge, square cut on coping buttress, north wing, west abutment.

N. Y. 8.—Is near *Syracuse, Onondaga County, N. Y.*, on Change bridge, copper plug in west side of coping, north wing, east abutment.

N. Y. 9.—Is near *Syracuse, Onondaga County, N. Y.*, on Rome, Watertown and Ogdensburg Railroad bridge, square cut on coping of buttress, south wing, towpath abutment.

N. Y. 10.—Is near *Liverpool, Onondaga County, N. Y.*, on culvert, square cut on northwest capstone, towpath side.

N. Y. 11.—Is near *Liverpool, Onondaga County, N. Y.*, on the Liverpool road bridge, copper plug, first step, south wing, towpath abutment.

N. Y. 12.—Is near *Belgium, Onondaga County, N. Y.*, on culvert, square cut on northwest capstone, towpath side.

N. Y. 13.—Is near *Belgium, Onondaga County, N. Y.*, on Road and Change bridge, copper plug, first step, south wing, towpath abutment.

N. Y. 14.—Is near *Belgium, Onondaga County, N. Y.*, on lock No. 5, copper plug, northeast lower towpath hollow quoin, between anchors.

N. Y. 15 = N. Y. 56.—Is at *Belgium, Onondaga County, N. Y.* (See p. 703.)

N. Y. 16 = N. Y. 54.—Is at *Phoenix, Oswego County, N. Y.* (See p. 703.)

DESCRIPTION OF PERMANENT BENCH MARKS BETWEEN TROY AND WHITEHALL, NEW YORK.

(See Report New York State Engineer and Surveyor, 1901, pp. 671-675.)

N. Y. 12 = D. W. Troy.—Is at *West Troy, Albany County, N. Y.* (See p. 677.)

N. Y. 13.—Is at *Troy, Albany County, N. Y.* (See p. 677.)

N. Y. 14.—Is at *Troy, Albany County, N. Y.* (See p. 677.)

N. Y. 1.—Is near *Waterford, Saratoga County, N. Y.*, on coping of lock No. 1, between ends of anchor southeast gate, marked ⊕ with chisel. Canal B. M. No. 1.

N. Y. 2.—Is near *Waterford, Saratoga County, N. Y.*, on coping of lock No. 2, between ends of anchors of southeast gate, marked ⊕ with chisel. Canal B. M. No. 3.

N. Y. 3.—Is near *Waterford, Saratoga County, N. Y.*, on coping of lock No. 3, between ends of anchor southwest gate, marked ⊕ with chisel. Canal B. M. No. 5.

N. Y. 4.—Is near *Waterford, Saratoga County, N. Y.*, on coping of lock No. 4, between ends of anchor northeast gate, marked □ with chisel.

N. Y. 5.—Is at *Waterford, Saratoga County, N. Y.*, on coping of Waterford side cut, southwest angle, upper combined lock, marked ⊕ with chisel. Canal B. M. No. 9.

N. Y. 6 = D. W. Waterford 2.—Is at *Waterford, Saratoga County, N. Y.* (See p. 713.)

N. Y. 7.—Is $\frac{1}{4}$ mile north of *Waterford, Saratoga County, N. Y.*, on Delaware and Hudson Railroad bridge over canal, on lower step, north wing, towpath abutment, marked □ with chisel.

N. Y. 8.—Is near *Waterford, Saratoga County, N. Y.*, on coping of lock N. 5, between ends of anchor, southeast gate, marked □ with chisel.

N. Y. 9.—Is near *Waterford, Saratoga County, N. Y.*, on coping of lock No. 6, between ends of anchor, southeast gate, marked □ with chisel.

N. Y. 10.—Is near *Waterford, Saratoga County, N. Y.*, on bridge No. 11, on third step, north wing towpath abutment, marked □.

N. Y. 11.—Is near *Waterford, Saratoga County, N. Y.*, on bridge No. 13, on second step, south wing towpath abutment, marked □ with chisel (third bridge north of lock No. 6).

N. Y. 12.—Is near *Waterford, Saratoga County, N. Y.*, on bridge No. 15, on first step, south wing towpath abutment, marked □ with chisel.

N. Y. 13 = D. W. Waterford 3.—Is near *Waterford, Saratoga County, N. Y.* (See p. 713.)

N. Y. 14.—Is near *Waterford, Saratoga County, N. Y.*, on bridge No. 16, on first step, north wing towpath abutment of farm bridge, marked □ with chisel.

N. Y. 15.—Is near *Waterford, Saratoga County, N. Y.*, on coping of lock No. 7, between ends of anchor, southeast gate, marked □ with chisel.

N. Y. 16.—Is near *Mechanicsville, Saratoga County, N. Y.*, on bridge No. 19, on first step, north wing towpath abutment, about 400 feet west of schoolhouse, marked □ with chisel.

N. Y. 17.—Is near *Mechanicsville, Saratoga County, N. Y.*, on coping of lock No. 8, between ends of anchor, southeast gate, marked □ with chisel.

N. Y. 18.—Is near *Mechanicsville, Saratoga County, N. Y.*, on bridge No. 21, southwest corner south wing, lower step towpath abutment, marked □ with a chisel.

N. Y. 19.—Is near *Mechanicsville, Saratoga County, N. Y.*, on bridge No. 22, on first step south wing towpath abutment, and is a square marked with a chisel.

N. Y. 20 = D. W. Mechanicsville 3.—Is at *Mechanicsville, Saratoga County, N. Y.* (See p. 714.)

N. Y. 21 = D. W. Mechanicsville 4.—Is at *Mechanicsville, Saratoga County, N. Y.* (See p. 714.)

N. Y. 22.—Is at *Mechanicsville, Saratoga County, N. Y.*, on bridge No. 24, square cut on southwest corner of south foundation of lift bridge, Park avenue, towpath side.

N. Y. 23.—Is near *Mechanicsville, Saratoga County, N. Y.*, on pulp mill sidetrack bridge, southwest corner of south foundation, towpath side, and is a square marked with chisel.

N. Y. 24.—Is near *Mechanicsville, Saratoga County, N. Y.*, on wastewear No. 5, on northeast corner of coping stone of south abutment, first wastewear north of Mechanicsville, and is a square marked with chisel.

N. Y. 25 = D. W. Mechanicsville.—Is near *Mechanicsville, Saratoga County, N. Y.* (See p. 714.)

N. Y. 26.—Is near *Stillwater, Saratoga County, N. Y.*, on coping lock No. 9, between ends of anchor southwest gate, marked with a square made with a chisel.

N. Y. 27.—Is near *Stillwater, Saratoga County, N. Y.*, on bridge No. 30, on second step south wing berme abutment, and is a square marked with chisel.

N. Y. 28.—Is near *Stillwater, Saratoga County, N. Y.*, on bridge No. 32, on lower step south wing berme abutment, and is a square marked with a chisel.

N. Y. 29.—Is at *Stillwater, Saratoga County, N. Y.*, on bridge No. 33, on lower step south wing towpath abutment, Sisson street, and is a square marked with a chisel.

N. Y. 30 = D. W. Stillwater 1.—Is at *Stillwater, Saratoga County, N. Y.* (See p. 714.)

N. Y. 31.—Is near *Stillwater, Saratoga County, N. Y.*, on bridge No. 35, second step south wing towpath abutment, marked with a square made by a chisel.

N. Y. 32.—Is near *Bemis Heights, Saratoga County, N. Y.*, on bridge No. 36, on second step south wing towpath abutment of farm and highway bridge, and is a square marked with a chisel.

N. Y. 33.—Is near *Bemis Heights, Saratoga County, N. Y.*, on bridge No. 38, on projection south wing, about 3 feet above ground, towpath abutment, Ford's farm bridge, and is a square marked with a chisel.

N. Y. 34.—Is near *Bemis Heights, Saratoga County, N. Y.*, on bridge No. 39, on the lower step south wing towpath abutment, Britton's farm bridge, and is a square marked with a chisel.

N. Y. 35=D. W. Bemis 1.—Is at *Bemis Heights, Saratoga County, N. Y.* (See p. 714.)

N. Y. 36.—Is at *Bemis Heights, Saratoga County, N. Y.*, on the southeast corner of the middle abutment of Bemis Heights wastewear, and is a cross marked with a chisel.

N. Y. 37.—Is near *Bemis Heights, Saratoga County, N. Y.*, on bridge No. 41, point cut on face of masonry second course above the ground at the east angle towpath abutment.

N. Y. 38=D. W. Bemis 2.—Is near *Bemis Heights, Saratoga County, N. Y.* (See p. 714.)

N. Y. 39.—Is near *Bemis Heights, Saratoga County, N. Y.*, on bridge No. 44, on the lower step south wing towpath abutment of Van Wie's farm bridge, and is a square marked with a chisel.

N. Y. 40.—Is near *Bemis Heights, Saratoga County, N. Y.*, on Wilber's wastewear, and is a square cut on the northeast corner of stone, first step from top of middle abutment.

N. Y. 41.—Is near *Bemis Heights, Saratoga County, N. Y.*, on bridge No. 48, on the lower step north wing towpath abutment of farm bridge, marked with a circle made with a chisel.

N. Y. 42.—Is near *Bemis Heights, Saratoga County, N. Y.*, on bridge No. 49, circle cut on lower step north wing towpath abutment (bridge down).

N. Y. 43.—Is near *Coveville, Saratoga County, N. Y.*, on bridge No. 50, on lower step south wing towpath abutment of road bridge, and is a circle made with a chisel.

N. Y. 44.—Is near *Coveville, Saratoga County, N. Y.*, on bridge No. 51, on lower step north wing towpath abutment of farm bridge, and is a circle made with a chisel.

N. Y. 45.—Is near *Coveville, Saratoga County, N. Y.*, on bridge No. 52, on second step south wing berme abutment, first bridge south of Salisbury's road bridge, and is a square made with a chisel.

N. Y. 46.—Is near *Coveville, Saratoga County, N. Y.*, on bridge No. 53, on first step north wing towpath abutment of Salisbury's road bridge, and is a square made with a chisel.

N. Y. 47.—Is near *Coveville, Saratoga County, N. Y.*, on bridge No. 54, on the second step north wing towpath abutment of farm bridge, and is a square marked with a chisel.

N. Y. 48.—Is near *Coveville, Saratoga County, N. Y.*, on bridge No. 55, on the second step north wing towpath abutment, first bridge south of electric railroad bridge near Coveville, and is a circle made with a chisel.

N. Y. 49.—Is at *Coveville, Saratoga County, N. Y.*, on wastewear, on coping of north abutment, and is a circle made with a chisel.

N. Y. 50=D. W. Coveville.—Is at *Coveville, Saratoga County, N. Y.* (See p. 714.)

N. Y. 51.—Is near *Coveville, Saratoga County, N. Y.*, on bridge No. 58, on the lower step north wing towpath abutment, a circle marked with a chisel.

N. Y. 52.—Is near *Schuylerville, Saratoga County, N. Y.*, on bridge No. 59, on the lower step south wing towpath abutment, and is a circle marked with a chisel.

N. Y. 53.—Is near *Schuylerville, Saratoga County, N. Y.*, on bridge No. 60, on lower step south wing towpath abutment, and is a square made with a chisel (Dwyer farm bridge).

N. Y. 54.—Is at *Schuylerville, Saratoga County, N. Y.*, on bridge No. 62, on lower step north wing towpath abutment, first bridge south of Ferry street, and is a square made with a chisel.

N. Y. 55=D. W. Schuylerville 1.—Is at *Schuylerville, Saratoga County, N. Y.* (See p. 714.)

N. Y. 56.—Is at *Schuylerville, Saratoga County, N. Y.*, on bridge No. 64, Saratoga street, on lower step, north wing, towpath abutment, first bridge north of Ferry street, and is a square marked with a chisel.

N. Y. 57=D. W. Schuylerville 2.—Is at *Schuylerville, Saratoga County, N. Y.* (See p. 715.)

N. Y. 58.—Is near *Schuylerville, Saratoga County, N. Y.*, on the lower step, south wing, towpath abutment, marked a square with a chisel. Bridge down.

N. Y. 59.—Is near *Northumberland, Saratoga County, N. Y.*, on the coping of lock No. 10, between ends of anchor, southeast gate, and is a circle with two diameters crossing at right angles, marked with a chisel. (Canal B. M. No. 46.)

N. Y. 60=D. W. Northumberland.—Is at *Northumberland, Saratoga County, N. Y.* (See p. 715.)

N. Y. 61.—Is near *Northumberland, Saratoga County, N. Y.*, on the coping of lock No. 11, between ends of anchor, southeast gate, and is a square marked with a chisel.

N. Y. 62.—Is near *Fort Miller, Saratoga County, N. Y.*, on bridge No. 69, on the lower step, south wing berme abutment, first bridge north of lock No. 11, and is a circle with two diameters crossing each other at right angles, made with a chisel.

N. Y. 63.—Is near *Fort Miller, Saratoga County, N. Y.*, on waste weir No. 12, on the top step, south abutment, towpath side, and is a square marked with a chisel.

N. Y. 64.—Is near *Fort Miller, Saratoga County, N. Y.*, on coping of lock No. 12, between ends of anchor, southeast gate, and is a square marked with a chisel.

N. Y. 65.—Is near *Fort Miller, Saratoga County, N. Y.*, on waste weir No. 13, on top of coping, south wing, and is a square marked with a chisel.

N. Y. 66.—Is at *Fort Miller, Saratoga County, N. Y.*, on bridge No. 74, on the lower step, north wing of east abutment of Fort Miller change bridge, and is a square marked with a chisel.

N. Y. 67=D. W. Fort Miller.—Is at *Fort Miller, Saratoga County, N. Y.* (See p. 715.)

N. Y. 68.—Is near *Fort Miller, Saratoga County, N. Y.*, on bridge No. 75, on the lower step, north wing, towpath abutment, first bridge south of lock No. 13, marked ⊕ with a chisel.

N. Y. 69.—Is near *Fort Miller, Saratoga County, N. Y.*, on coping of lock No. 13, between ends of anchor, southwest gate, and is a circle marked with a chisel.

N. Y. 70.—Is near *Fort Miller, Saratoga County, N. Y.*, on bridge No. 77, on the lower step, north wing, towpath abutment of farm bridge, and is a square marked with a chisel.

N. Y. 71.—Is near *Fort Miller, Saratoga County, N. Y.*, on bridge No. 78, on the second step, north wing, towpath abutment of farm bridge, and is marked \oplus with a chisel.

N. Y. 72.—Is near *Fort Miller, Saratoga County, N. Y.*, on bridge No. 79, on the lower step, north wing, berme abutment of Comer's farm bridge, and is marked \oplus with a chisel.

N. Y. 73.—Is near *Fort Miller, Saratoga County, N. Y.*, on bridge No. 80, on the lower step, south wing, berme abutment of farm bridge, marked \oplus with chisel.

N. Y. 74.—Is near *Fort Miller, Saratoga County, N. Y.*, on bridge No. 81, on lower step, south wing, towpath abutment, and is a circle made with a chisel.

N. Y. 75.—Is near *Fort Miller, Saratoga County, N. Y.*, on coping of lock No. 14, between ends of anchor, southeast gate, marked \oplus with a chisel. Canal B. M. No. 63.

N. Y. 76 = D. W. Moses Kill.—Is near *Fort Edward, Saratoga County, N. Y.* (See p. 715.)

N. Y. 77.—Is near *Fort Edward, Saratoga County, N. Y.*, on bridge No. 84, on the lower step, south wing, towpath abutment, and is a circle marked with a chisel.

N. Y. 78.—Is near *Fort Edward, Saratoga County, N. Y.*, on bridge No. 85, on the second step, north wing, towpath abutment, and is a square marked with a chisel.

N. Y. 79.—Is near *Fort Edward, Saratoga County, N. Y.*, on waste weir No. 14, on the northwest corner of coping of south abutment, and is a square marked with a chisel.

N. Y. 80.—Is near *Fort Edward, Saratoga County, N. Y.*, on bridge No. 87, on the lower step, south wing, berme abutment, first bridge north of Satterlee's footbridge, and is a square marked with a chisel.

N. Y. 81.—Is near *Fort Edward, Saratoga County, N. Y.*, on bridge No. 88, on the lower step, north wing, towpath abutment of road bridge, marked \oplus with chisel.

N. Y. 82 = D. W. Snook Kill.—Is near *Fort Edward, Saratoga County, N. Y.* (See p. 715.)

N. Y. 83.—Is near *Fort Edward, Saratoga County, N. Y.*, on bridge No. 91, on the lower step, south wing, berme abutment of farm bridge, marked \oplus , about 600 feet north of brick house in field.

N. Y. 84.—Is near *Fort Edward, Saratoga County, N. Y.*, on bridge No. 93, on the lower step, south wing, berme abutment of farm bridge, marked \oplus with a chisel.

N. Y. 85.—Is near *Fort Edward, Saratoga County, N. Y.*, on bridge No. 94, on the lower step, north wing, berme abutment of farm bridge, marked \oplus with chisel.

N. Y. 86.—Is near *Fort Edward, Saratoga County, N. Y.*, on bridge No. 95, on the lower step, north wing, berme abutment of road bridge, first bridge south of electric railroad near Fort Edward, marked \oplus with chisel.

N. Y. 87.—Is near *Fort Edward, Saratoga County, N. Y.*, on bridge No. 96, on the second step, north wing, towpath abutment, marked \oplus with chisel.

N. Y. 88.—Is at *Fort Edward, Saratoga County, N. Y.*, on south end of coping of wall at edge of canal, towpath side of aqueduct No. 4, Fort Edward, marked \oplus with chisel.

N. Y. 89=U. S. G. S.—Is at *Fort Edward, Saratoga County, N. Y.* (See p. 715.)

N. Y. 90.—Is near *Fort Edward, Saratoga County, N. Y.*, on the coping of lock No. 15, between the ends of anchor southeast gate, marked \oplus with chisel. Canal B. M. No. 79.

N. Y. 91.—Is near *Fort Edward, Saratoga County, N. Y.*, on bridge No. 99, on the lower step, south wing, berme abutment, first bridge north of lock No. 15, marked \oplus with chisel.

N. Y. 92.—Is near *Fort Edward, Saratoga County, N. Y.*, on waste weir No. 15, on the coping of the east wing, north abutment, about $1\frac{1}{4}$ miles north of Fort Edward, and is a square marked with a chisel.

N. Y. 93.—Is at *Glens Falls, Saratoga County, N. Y.*, on bridge No. 100, on the lower step, north wing, berme abutment of change bridge at Glens Falls feeder, marked \oplus with chisel.

N. Y. 94.—Is near *Glens Falls, Saratoga County, N. Y.*, on bridge No. 101, on the second step, north wing, berme abutment of farm bridge, and is a circle marked with a chisel.

N. Y. 95=D. W. Dunham.—Is at *Dunhams Basin, Washington County, N. Y.* (See p. 715.)

N. Y. 96.—Is near *Dunhams Basin, Washington County, N. Y.*, on bridge No. 102, on lower step, north wing, berme abutment of Dunham's road bridge, and is a square marked with a chisel.

N. Y. 97.—Is near *Dunhams Basin, Washington County, N. Y.*, on the northwest corner of a red barn, on towpath, on stone foundation, and is a square marked with a chisel.

N. Y. 98.—Is near *Dunhams Basin, Washington County, N. Y.*, and is a spike in the west side of the elm tree, about 30 feet from front angle of towpath in Davison's front yard, about 3 miles north of Dunhams Basin.

N. Y. 99.—Is near *Smiths Basin, Washington County, N. Y.*, on bridge No. 103, on projection, north end of second course of masonry, towpath abutment, marked with a square made by a chisel.

N. Y. 100.—Is near *Smiths Basin, Washington County, N. Y.*, on bridge No. 104, on the lower step of north wing, towpath abutment, and is a square marked with a chisel.

N. Y. 101=D. W. Smith.—Is at *Smiths Basin, Washington County, N. Y.* (See p. 715.)

N. Y. 102.—Is at *Smiths Basin, Washington County, N. Y.*, on bridge No. 105, on the second step north wing towpath abutment, and is a square marked with a chisel.

N. Y. 103.—Is near *Smiths Basin, Washington County, N. Y.*, on bridge No. 106, on the lower step south wing berme abutment, marked \oplus with a chisel.

N. Y. 104.—Is near *Smiths Basin, Washington County, N. Y.*, on bridge No. 107, on the lower step north wing berme abutment, and is a square marked with a chisel.

N. Y. 105.—Is near *Smiths Basin, Washington County, N. Y.*, on bridge No. 108, on the lower step south wing berme abutment, and is a square marked with a chisel.

N. Y. 106.—Is near *Fort Ann, Washington County, N. Y.*, on bridge No. 110, on the lower step north wing berme abutment of road bridge, $1\frac{1}{2}$ miles south of Fort Ann, and is a square marked with a chisel.

N. Y. 107.—Is near *Fort Ann, Washington County, N. Y.*, on bridge No. 111, on the lower step north wing towpath abutment of road bridge, and is a square marked with a chisel.

N. Y. 108.—Is near *Fort Ann, Washington County, N. Y.*, on bridge No. 112, on the lower step north wing, towpath abutment of farm bridge, and is a square marked with a chisel.

N. Y. 109.—Is near *Fort Ann, Washington County, N. Y.*, on bridge No. 113, on the lower step, south wing berme abutment of farm bridge, and is a square marked with a chisel.

N. Y. 110.—Is near *Fort Ann, Washington County, N. Y.*, on coping of lock No. 16, between ends of anchor, southwest gate, and is a square marked with a chisel.

N. Y. 111.—Is near *Fort Ann, Washington County, N. Y.*, on coping of lock No. 18, between ends of anchor, northeast gate, and is a square marked with a chisel.

N. Y. 112 = D. W. Fort Ann.—Is at *Fort Ann, Washington County, N. Y.* (See p. 715.)

N. Y. 113.—Is near *Comstock, Washington County, N. Y.*, on Dewey's private bridge on projection of fifth stone in second course of masonry of south wing, towpath abutment, marked with chisel.

N. Y. 114.—Is near *Comstock, Washington County, N. Y.*, on coping of lock No. 19, between ends of anchor of northwest gate, and is a square marked with a chisel.

N. Y. 115 = D. W. Comstock 1.—Is near *Comstock, Washington County, N. Y.* (See p. 715.)

N. Y. 116.—Is near *Comstock, Washington County, N. Y.*, on Comstock's road bridge No. 118, on projection of first course of masonry, south wing, towpath abutment, and is a square marked with a chisel.

N. Y. 117.—Is near *Comstock, Washington County, N. Y.*, on private road bridge, on projection of fifth course of masonry below coping, towpath abutment (near center), and is a circle marked with a chisel.

N. Y. 118.—Is near *Comstock, Washington County, N. Y.*, on bridge No. 120, on the second step, south wing, towpath abutment, and is a square marked with a chisel.

N. Y. 119.—Is near *Comstock, Washington County, N. Y.*, on coping of lock No. 20, between the ends of anchor of northwest gate, and is a square marked with a chisel.

N. Y. 120 = D. W. Comstock 2.—Is between *Comstock and Whitehall, Washington County, N. Y.* (See p. 716.)

N. Y. 121.—Is between *Comstock and Whitehall, Washington County, N. Y.*, on bridge No. 125, on the lower step north wing, berme abutment of farm bridge, about mile north of lock No. 20, and is a square marked with a chisel.

N. Y. 122.—Is between *Comstock and Whitehall, Washington County, N. Y.*, on bridge No. 126, lower step north wing, towpath abutment (iron bridge), and is a square marked with a chisel.

N. Y. 123.—Is near *Whitehall, Washington County, N. Y.*, on bridge No. 127, lower step north wing, towpath abutment of bridge, and is a square marked with a chisel.

N. Y. 124.—Is near *Whitehall, Washington County, N. Y.*, on bridge No. 129, on lower step north wing, towpath abutment of farm bridge, and is a square marked with a chisel.

N. Y. 125.—Is near *Whitehall, Washington County, N. Y.*, on bridge No. 130, on the second step south wing, berme abutment of farm bridge, marked \oplus with a chisel.

N. Y. 126.—Is near *Whitehall, Washington County, N. Y.*, on bridge No. 131, on the lower step north wing, berme abutment, first bridge south of Delaware and Hudson Railroad bridge, and is a square marked with a chisel.

N. Y. 127.—Is at *Whitehall, Washington County, N. Y.*, on waste weir No. 24, on coping of north wall east stone, about 1,100 feet south of Delaware and Hudson Railroad, Rutland branch, and is a square marked with a chisel.

N. Y. 128.—Is at *Whitehall, Washington County, N. Y.*, on bridge No. 132, on the lower step north wing, towpath abutment, Fordman street, and is a square marked with a chisel.

N. Y. 129.—Is at *Whitehall, Washington County, N. Y.*, on coping of lock No. 21, between ends of anchor, northeast gate, and is a square marked with a chisel.

N. Y. 130 = U. S. C. S. 36.—Is at *Whitehall, Washington County, N. Y.* (See p. 715.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN WATERFORD AND WHITEHALL, N. Y.

(See Report of Board on Deep Waterways, 1900, Part II, pp. 1023-1025.)

N. Y. 12.—Is at *West Troy, Albany County, N. Y.* (See p. 671.)

D. W. Waterford 1.—Is at *Waterford, Saratoga County, N. Y.*, and is a crow foot on the southwest corner of the bridge seat of the north abutment of the Delaware and Hudson Railroad bridge over the Fourth Branch of the Mohawk River.

N. Y. 6.—Is at *Waterford, Saratoga County, N. Y.*, and is a square cut in the south end of the stone doorsill to the west entrance of the Delaware and Hudson Canal Company's railroad passenger (lower) depot. (See note 41, p. 584.)

N. Y. 13.—Is "about $3\frac{1}{2}$ miles north of *Waterford, Saratoga County, N. Y.*, and about one-fourth mile east of canal" (N. Y.), on the south side of George S. Forse's road house "on east side of Waterford and Whitehall road" (D. W.), and is a square cut in east end of "stone window sill of west cellar window" (D. W.). (See note 41, p. 584.)

D. W. Mechanicsville 1.—Is at *Mechanicsville, Saratoga County, N. Y.*, and is a square cut on the north end of the stone sill of the most northerly window on the west face of the Hudson River Power Transmission Company's power house.

D. W. Mechanicsville 2.—Is at *Mechanicsville, Saratoga County, N. Y.*, and is a square cut in the surface of the concrete masonry of the sluice gates near the southwest corner of the same and at the west end of weir of Hudson River Power Transmission Company's dam.

N. Y. 20.—Is at *Mechanicsville, Saratoga County, N. Y.*, and is a square cut near the south end of the sill of the basement window between the tower and the main entrance of the Presbyterian Church, on Main street. (See note 41, p. 584.)

N. Y. 21.—Is at *Mechanicsville, Saratoga County, N. Y.*, and is a notch cut in the angle of the stone water table at the northeast corner of the main building of the Methodist Episcopal Church, Main street. (See note 41, p. 584.)

D. W. Mechanicsville 5.—Is at *Mechanicsville, Saratoga County, N. Y.*, and is a square cut on the north end of the stone sill of the south door on the west front of chipping mill at Duncan Company's pulp and paper mills.

N. Y. 25.—Is between *Mechanicsville* and *Stillwater, Saratoga County, N. Y.*, and is the head of bolt at the base of the first south column just east of the electric railway track at the west end of the Fitchburg Railroad bridge over the Hudson River. (See note 41, p. 584.)

N. Y. 30.—Is at *Stillwater, Saratoga County, N. Y.*, and is a square cut in the south end of a large flat stone step at the entrance to the First Methodist Episcopal Church. (See note 41, p. 584.)

D. W. Stillwater 2.—Is between *Stillwater* and *Schaghticoke, in Rensselaer County, N. Y.*, and is a spike in the bench cut in a root on the west side of an elm tree, on the right bank of the Hoosick River, about 200 feet from the water's edge in the main channel and about 1,000 feet downstream from the mouth of the Tourhannock Creek.

N. Y. 35.—Is at *Bemis Heights, Saratoga County, N. Y.*, on the north abutment of "waste weir" (N. Y.) or "sluice gate of Champlain Canal near iron truss canal bridge No. 36" (D. W.) in the southeast corner of top stone and is the top of an iron bolt "with stone chiseled away around it" (N. Y.). (See note 41, p. 584.)

N. Y. 38.—Is about 1 mile north of *Bemis Heights, Saratoga County, N. Y.*, "on the south end of east abutment of iron truss canal bridge No. 39" (D. W.), or "the south wing of the towpath abutment of bridge No. 43" (N. Y.), and is a square cut "in the southwest corner of stone in lower course" (D. W.). (See note 41, p. 584.)

D. W. Wilburs Basin 1.—Is at *Wilburs Basin, Saratoga County, N. Y.*, and is a square cut on the southwest corner of the stone at the north end of the semicircular coping on the stonework of the outlet of the basin.

U. S. G. S.—Is between *Wilburs Basin*, and *Coveville, in Saratoga County, N. Y.*, and is a circle painted with red paint on the northeast corner of the top stone of the east end of north abutment of sluice gate, on Champlain Canal, 1.7 miles north of Wilburs Basin, established by the United States Geological Survey.

N. Y. 50.—Is about 1 000 feet "east" (D. W.) or "north" (N. Y.) of *Coveville, Saratoga County, N. Y.*, "on the south abutment of Champlain Canal bridge No. 54" (D. W.), or "on the north wing, towpath abutment, bridge No. 57" (N. Y.), and is "a square marked with chisel on lower step" (N. Y.), or "a circle cut on the northeast corner of last stone of second course above the surface of the ground" (D. W.). (See note 41, p. 584.)

N. Y. 55.—Is at *Schuylerville, Saratoga County, N. Y.*, on the Ferry street bridge, "Canal bridge No. 60" (D. W.), or "bridge No. 63" (N. Y.), on north wing wall of east or towpath abutment, and is a circle marked with chisel "on the second step" (N. Y.), or "on northeast corner of ninth stone of third course from ground" (D. W.). (See note 41, p. 584.)

N. Y. 57.—Is at *Schuylerville, Saratoga County, N. Y.*, "on south wing berme abutment road and trolley bridge No. 65" (N. Y.), or "on south wing wall west abutment of Champlain Canal bridge No. 62, on the road leading to new iron truss bridge over the Hudson River" (D. W.), and is a square marked with chisel "on second step" (N. Y.), or "on the southeast corner of the stone at the south end of the second course of masonry above water surface" (D. W.). (See note 41, p. 584.)

N. Y. 60.—Is at *Northumberland, Saratoga County, N. Y.*, and is a square cut on the southeast corner of the coping at south end of the east wall, lock No. 10. (See note 41, p. 584.)

N. Y. 67.—Is at *Fort Miller, Washington County, N. Y.*, "about 1 700 feet north of Tharp & Wegman's pulp mill" (D. W.), and is a square cut in the south end of south window sill in front of brick blacksmith shop and on the east side of the highway along east bank of Hudson River. (See note 41, p. 584.)

N. Y. 76.—Is at *Moses Kill, Washington County, N. Y.*, "on bridge No. 83" (N. Y.), or "the Champlain Canal bridge just north of aqueduct" (D. W.) on "west abutment" (D. W.) or "north wing towpath abutment" (N. Y.), and is a square marked with chisel "on rear of second course of masonry" (N. Y.), or "on northwest corner of north stone in second course above the ground" (D. W.). (See note 41, p. 584.)

N. Y. 82.—Is near *Fort Edward, Washington County, N. Y.*, "across the river from and almost 600 feet south of the mouth of Snook Kill" (D. W.), "on road bridge No. 90" (N. Y.) over canal on north wing west or towpath abutment and is a square marked with a chisel "on second step" (N. Y.) or "in northeast corner of north stone third course above ground" (D. W.). (See note 41, p. 584.)

N. Y. 89=U. S. G. S.—Is at *Fort Edward, Washington County, N. Y.*, on the wall over the north side of the west entrance of high school building and is "a nickel plate about 5 inches in diameter" (D. W.) or "an aluminum bronze tablet" (N. Y.). (See note 41, p. 584, except bench mark was established by the Geological Survey.)

N. Y. 95.—Is at *Dunhams Basin, Washington County, N. Y.*, on south abutment of Delaware and Hudson Railroad bridge over canal overflow 600 feet south of highway, and is a square cut with chisel on northwest corner of west stone, top course of masonry. (See note 41, p. 584.)

N. Y. 101.—Is at *Smiths Basin, Washington County, N. Y.*, on northwest corner of west stone of top course of masonry on south abutment of small plate girder bridge on Delaware and Hudson Railroad just north of the station, and is marked □ with chisel. (See note 41, p. 584.)

N. Y. 112.—Is at *Fort Ann, Washington County, N. Y.*, on the coping of the parapet wall to the north abutment of the Delaware and Hudson Railroad bridge "over Wood Creek" (D. W.) or "over canal" (N. Y.) and is a cross near the north edge of stone and directly opposite space between the two bridges; "cross in hollow" (N. Y.). (See note 41, p. 584.)

N. Y. 115.—Is near *Comstock, Washington County, N. Y.*, and is a square cut in the southeast corner of south stone of coping of culvert and on the east side of roadbed of Delaware and Hudson Railroad, about 2 800 feet south of station. (See note 41, p. 584.)

N. Y. 120.—Is between *Comstock* and *Whitehall*, *Washington County, N. Y.*, and is a square cut on southeast corner of stone, south berme abutment of Delaware and Hudson Railroad bridge over canal on west side at the north end of plate girder where it connects with middle truss of bridge.

D. W. Whitehall 1.—Is near *Whitehall*, *Washington County, N. Y.*, and is a square cut on the east stone, top course of south abutment, canal sluice, 1 100 feet south of bridge over canal, of Rutland branch of Delaware and Hudson Railroad.

N. Y. 130 = U. S. C. S. 36.—Is at *Whitehall*, *Washington County, N. Y.*, on coping of west wall of lower lock "No. 23" (N. Y.) "just north of hollow quoin of lower gate" (D. W.), "between end of anchor N. W. gate" (N. Y.), marked "U. S. Coast Survey. Elev. = 104.71" (D. W.) or "U. S." (N. Y.) (See note 41, p. 584, except the bench mark was established by the Coast and Geodetic Survey.)

DESCRIPTION OF PERMANENT BENCH MARKS FROM WHITEHALL TO CROWN POINT L. H.

(See Report of Board on Deep Waterways, 1900, pp. 1025, 1026.)

U. S. B. M.—Is near *Whitehall*, *Washington County, N. Y.*, and is a square cut on the shelf of rock about 1 foot above ground in the east side of the second rock cut north of the town, near the middle of the cut. The rock wall is marked 1 foot above the bench mark by chiseled letters "U. S. B. M."

D. W. Snody.—Is about 1 000 feet south of *Snody Dock*, *Washington County, N. Y.*, and is a square cut on the northwest corner of the north stone of coping of culvert, and is on the west side of the roadbed of Delaware and Hudson Railroad.

D. W. Chubb.—Is near *Chubbs Dock*, *Washington County, N. Y.*, and is a square cut on the southeast corner of east large stone at top course of the north abutment of small plate-girder bridge No. 5, Delaware and Hudson Railroad, about 400 feet north of station.

D. W. Dresden.—Is about 1 900 feet north of *Dresden*, *Washington County, N. Y.*, and is a square cut on the southwest corner of south stone of coping of arch culvert on the west side of roadbed of Delaware and Hudson Railroad.

U. S. C. S. 39.—Is at *Putnam*, *Washington County, N. Y.*, and is cut on a ledge of rock on the west side of the railroad track near the north end of the first rock cut south of the station. It consists of the letters "B. M." and a cross and circle chiseled into the rock.

D. W. Putnam 2.—Is about 1 900 feet north of *Putnam*, *Washington County, N. Y.*, and is a square cut on the southeast corner of south stone coping, west face of large culvert on Delaware and Hudson Railroad.

D. W. Wrights.—Is about 1 800 feet north of *Wrights*, *Washington County, N. Y.*, and is a square cut in the northeast corner of the second course of masonry from tops south abutment of bridge No. 16, Delaware and Hudson Railroad.

D. W. Ticonderoga.—Is at *Fort Ticonderoga*, *Essex County, N. Y.*, and is a square cut on the southwest corner of masonry projection of water tank south of depot.

U. S. G. S.—Is at *Ticonderoga*, *Essex County, N. Y.*, and is a circle with a hole in the center in large stone on the southeast corner of the north abutment of the Delaware and Hudson Railroad drawbridge No. 19 over Ticonderoga Creek near its mouth. The bench mark is marked "U. S. G. S. B. M."

D. W. Five Mile Point.—Is between *Addison Junction* and *Crown Point* in *Essex County, N. Y.*, and is a square cut on the southeast corner of the east coping of culvert on Delaware and Hudson Railroad over creek entering Lake Champlain about 2 200 feet south of Five Mile Point.

D. W. Crown Point.—Is about 2 800 feet north of *Crown Point, Essex County, N. Y.*, and is a square cut on the surface of coping at south end of the east wing wall of the south abutment of bridge No. 23 on Delaware and Hudson Railroad bridge over Putnam Creek.

Crown Point North Base.—Is about 1 600 feet south of the ruins of old English fort at *Fort Frederick, Essex County, N. Y.* The bench mark is a lead bolt in the center of pyramid cut on the natural rock outcrop in the center of thornbush thicket, 1 700 feet west of the highway. The bench mark is the north base of Crown Point base line and is marked "U. S. C. S. Base Line, 1872."

L. H.—Is at *Crown Point Lighthouse, Essex County, N. Y.*, and is a square cut in the masonry on the east side just south of the corner of the second course above ground of light-house.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN COOPERVILLE AND HOGANSBURG, N. Y.

(See Report of Board on Deep Waterways, 1900, Part II, pp. 1026-1029.)

D. W. Cooperville.—Is near *Cooperville, Clinton County, N. Y.*, is the center of a square cut in the southwest corner of the coping stone on the southwest corner of the center pier of the Delaware and Hudson Railroad bridge over the Great Chazy River. Destroyed in railroad accident, August, 1903.

D. W. Leggets Crossing.—Is about 800 feet south of Legget's crossing and 1.5 miles north of *Cooperville, Clinton County, N. Y.*, and is a point in a square on iron pin in coping stone on the west side of the Delaware and Hudson Railroad track, 2 feet west of the west side of opening and 6 inches back from the north edge of a culvert.

Rouses Point 1882.—Is at *Rouses Point, Clinton County, N. Y.*, on the water table on the north side of the Chapman Block building, 20.6 feet west from the northeast corner, on the west side of Lake street and on the south side of Chapman street, and is 1.6 feet above the ground, and consists of a cross and circle.

U. S. E.—Is at *Fort Montgomery, Clinton County, N. Y.* Level of the base of scarp wall on the north face of bastion B, Fort Montgomery, about 3 feet from the angle with the east curtain of the fort, and corresponds with the United States Engineers' bench mark at this point.

D. W. Champlain 1.—Is between *Cooperville* and *Champlain* in *Clinton County, N. Y.*, and is a nail driven in the root of the southwest side of an elm tree $3\frac{3}{4}$ feet in diameter, standing on the south side of the highway on the east side of the Great Chazy River. It is about 7 500 feet from the Oak street bridge at Champlain, N. Y., as measured along the highway, and about 900 feet east of the east bank of the river.

D. W. Champlain 2.—Is at *Champlain, Clinton County, N. Y.*, on a 2-inch square cut in the top of the first step above the main abutment on the west side of the north abutment of the Oak street bridge over the Great Chazy River.

D. W. Champlain 3.—Is about 1 mile north of *Champlain, Clinton County, N. Y.*, on a 1½-inch square cut in the stone step near the east side of the front door of the Champlain waterworks.

D. W. Champlain 4.—Is between *Champlain, Clinton County, N. Y.*, and *Barrington, Quebec*, and is a nail in the root on the west side of an elm tree 1½ feet in diameter, on the north side of the Great Chazy River, about 2.6 miles northwest of Champlain, N. Y. It is about 80 feet west of a small creek, about 1 400 feet north of the north bank of the Great Chazy River and about 730 feet south of the international boundary line.

D. W. Champlain 5.—Is between *Champlain, Clinton County, N. Y.*, and *Barrington, Quebec*, and is a square, 1½ inches on a side cut in the top of a bowlder about 50 feet south of barn on the property of James Straps, located about 5.6 miles northwest of Champlain, N. Y., and is about 1 360 feet east of the intersection of the highway running north and south with the road to Hemmingford.

D. W. Barrington 1.—Is about 2.7 miles south of *Barrington, Quebec*, and is a nail in the root on the northeast side of an elm tree 2 feet in diameter, on the property of Joseph Robinson, about 50 feet east of the Little Montreal River and about 550 feet north of the east and west highway and 300 feet west of the north and south highway.

D. W. Barrington 2.—Is at *Barrington, Quebec*, and is a nail in the root on the west side of an elm tree 2½ feet in diameter on the west side of the highway running northeast and southwest through Barrington, and is about 2 400 feet southwest of the crossing of this highway with the Grand Trunk Railroad.

D. W. Barrington 3.—Is between *Barrington* and *St. Clothilde, Quebec*, and is a nail in the root on the northwest side of a maple tree 10 inches in diameter, on the south side of the right of way of the Canada and Atlantic Railroad, and 150 feet east of the east end of bridge over Cranberry Creek, about 3 miles west of Barrington.

D. W. St. Clothilde 1.—Is about 1½ miles southeast of *St. Clothilde, Quebec*, and is a nail in the root on the north side of an elm tree 8 inches in diameter, about 100 feet south of south right of way line of the Canada and Atlantic Railroad, and about 600 feet west of Holton railroad station.

D. W. St. Clothilde 2.—Is between *St. Clothilde* and *Aubrey, Quebec*, and is a nail in the root on the south side of an elm tree 16 inches in diameter, about 40 feet north of north right of way line of the Canada and Atlantic Railroad, and about 750 feet west of the first highway crossing west of Holton station.

D. W. Aubrey 1.—Is at *Aubrey, Quebec*, and is a nail in the root on the west side of an ash tree 14 inches in diameter, about 80 feet south of the south bank of the English River and about 500 feet north of the intersection of highways at Aubrey.

D. W. Aubrey 2.—Is between *Aubrey* and *Ormstown, Quebec*, and is a nail in the root on the south side of an oak tree 18 inches in diameter, on the Fertile Creek road about 3.6 miles west of Aubrey and about 700 feet southwest of the culvert on this highway over Fertile Creek.

D. W. Ormstown 1.—Is at *Ormstown, Quebec*, and is the center of a 1½-inch square cut in the top of coping stone near the northwest corner of the east abutment of the highway bridge over the Chateauguay River.

D. W. Ormstown 2.—Is between *Ormstown* and *St. Stanislas, Quebec*, and is a nail in the root on the west side of a poplar tree 2 feet in diameter, on the south side of the highway at a point about 750 feet west of the intersection of highways about 4 miles northwest of highway bridge at Ormstown.

D. W. St. Stanislas.—Is at *St. Stanislas, Quebec*, and is on the top of horizontal offset of water table, which is about 1 inch below the top of the west doorstep of the St. Stanislas Roman Catholic church. It is on top of angle at the east side of pilaster near the southwest corner of the church, and the angle at the bench mark is $5\frac{1}{2}$ feet west of the west doorstep of the church. There are no marks to indicate the location of the bench mark.

D. W. Lake St. Francis.—Is about 2.7 miles from *St. Stanislas, Quebec*, and is on a $1\frac{1}{2}$ -inch square marked "B. M.," cut in the top ledge of limestone about 64 feet from lake shore on a point of land projecting into Lake St. Francis, about 2 150 feet west of the intersection of highway running northwest from St. Stanislas with highway near the lake shore.

D. W. Valleyfield.—Is at *Valleyfield, Quebec*, Coping of north wall of Lock No. 14, Beauharnois Canal. Bench mark is on the iron bolt in strap, 6 inches from heel post of upper gate.

D. W. Huntingdon.—Is at *Huntingdon, Quebec*, on the top of an iron monument on the southeast corner of the first street intersection south of the Grand Trunk Railroad depot.

D. W. Carr.—Is a nail in the root on the west side of an elm tree 14 inches in diameter, 160 feet north of the center of the track of the Grand Trunk Railroad, and 360 feet east of the road at *Carrs Crossing, Quebec*.

D. W. White.—Is a nail in the root on the north side of a maple tree 14 inches in diameter, 20 feet south of the center of the track of the Grand Trunk Railroad, and 3 feet east of the east road fence at *Whites Station, Quebec*.

D. W. St. Agnes.—Is a nail in the root on the north side of an elm tree 20 inches in diameter, 60 feet from the center of the track of the Grand Trunk Railroad, in the east fence line of the road east of *St. Agnes, Quebec*.

D. W. Fort Covington.—Is a two-inch square, 1 foot from the south edge and 1 foot from the east edge of the east abutment of the Grand Trunk Railroad bridge over the Salmon River at *Fort Covington, N. Y.*

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN DOBBS FERRY AND RENSSELAER (GREENBUSH), N. Y.

Tidal 1 Dobbs Ferry.—Is at *Dobbs Ferry, Westchester County, N. Y.*, (See App. 8 of Report for 1899, p. 557.) Is probably Van Orden's Is'. The mark has worn off the brick, destroying the bench mark.

V.—Is at *Dobbs Ferry, Westchester County, N. Y.* (See App. 8, Report for 1899, p. 557.) Reported in fair state of preservation and apparently undisturbed in 1902.

T.—Is at *Dobbs Ferry, Westchester County, N. Y.*, about 150 feet south of the railroad station, about 75 feet north of the center of the highway bridge across the tracks, on the retaining wall on the east side of the track, in the capstone of the lowest "step," about 18 feet from the north end and about 8 inches from the end of the next higher "step." (See note 3, p. 580.)

U.—Is at *Dobbs Ferry, Westchester County, N. Y.*, on the west side of the stone railroad station, in the fourth stone above the sill, 10 inches south of the door to the baggage room, 5 feet above the ground and 4 feet north of the southwest corner of the building. (See note 13, p. 581.)

W.—Is at *Dobbs Ferry, Westchester County, N. Y.*, one-fourth mile north of the railroad station on the east side of the track, on a very hard stone projecting from the foundation of the main and most southern building of the Manila Anchor Brewing Company's plant, on the west side of the building, 18 feet from the north end and 90 feet from the south end, $2\frac{1}{2}$ inches from the brick wall, and 6 inches above the ground. (See note 3, p. 580.)

R. R. 36.—Is between *Ardley and Irvington, Westchester County, N. Y.*, on the west side of the south abutment of culvert No. 54, and consists of a round-headed iron bolt set vertically into the rock. The center of the bolthead, not the highest part, is the point used.

X.—Is about one-half mile south of *Tarrytown, Westchester County, N. Y.*, just south of the first cut below the station, on a hard rock *in situ*, about 100 yards south of the center of the mound of earth left standing on the river side of the tracks, 8 feet west of the west rail, and 3 feet above the top of the rails. (See note 3, p. 580.)

Y.—Is about one-half mile south of *Tarrytown, Westchester County, N. Y.*, and 100 yards north of B. M. X., 198 feet south of the center of culvert No. 63, on the east side of the track, 6 feet from the east rail and 8 inches below the top of the rail, about opposite the center of the mound of earth left standing on the west side of the tracks, on a horizontal ledge of very hard stone projecting from the bottom of the face of the cut. (See note 3, p. 580.)

Tidal 1 Tarrytown.—Is at *Tarrytown, Westchester County, N. Y.*, on the top edge of the coping stone on an approximate level with the floor of the Tarrytown Tile Works on Main street, a short distance west of the railroad, 3.5 feet east of the middle door and 2.8 feet above the ground. An arrowhead on the sloping face of the coping stone points to the exact spot where the rod was held, and the letters U. S. C. S. B. M. were cut in the first row of brick above the bench mark.

Z.—Is at *Tarrytown, Westchester County, N. Y.*, on the first highway bridge across the tracks north of the railroad station, on the south end of the east abutment, 4 feet above the ground and 12 inches from the face next the tracks. (See note 13, p. 581.)

A_r.—Is about $1\frac{3}{4}$ miles north of *Tarrytown, Westchester County, N. Y.*, 22 rails north of milepost 27 from New York, in a bed of hard stone 9 feet west of the west rail and in plain view from the edge of the track. The head of the bolt was smoothed off with a file and a cross cut in the center to mark the exact point used. This bench mark was left unlettered. It is probably a railroad line mark, but it is not mentioned in the list of descriptions furnished by the railroad. (See notes 13 and 18, p. 581, 582.)

Iq'.—Is about 2 miles north of *Tarrytown, Westchester County, N. Y.*, on the Rockefeller property, $12\frac{1}{2}$ rails south of tower 25. New mark just north of hole. (See note 20, p. 582.)

B_r.—Is at *Scarboro, Westchester County, N. Y.*, 41 rails north of the station, on the first bridge above Scarboro, on the center line of the south abutment, 2 feet from the west end. The stone was made smooth and a shallow cross mark made to fix the spot where the rod was held, and this was inclosed in a square $1\frac{1}{4}$ inches on the side cut in the stone and lettered thus:

U S
⊕
B M

Tidal 2 Ossining.—Is at *Ossining, Westchester County, N. Y.*, on a brick building on the west side of the railroad track, on the next block north of the depot, on top of the stone sill of the north window on the west side, and consists of cross lines with three-fourths-inch square cut at the intersection and lettered thus:



R. R. 60.—Is about $1\frac{1}{2}$ miles north of *Ossining, Westchester County, N. Y.*, on the west end of the north abutment of bridge No. 92, being the highest point in a triangle cut in the stone. Probably destroyed.

C.₁—Is about one-half mile north of *Croton, Westchester County, N. Y.*, on the first small rocky point north of the coal chutes and water tanks, 178 meters north of mile-post 35 from New York, on the top of a large bed of rock, about 6 feet west of the west rail. Destroyed 1913. (See notes 3 and 18, pp. 580, 582.)

R. R. 67.—Is near *Oscawana, Westchester County, N. Y.*, 100 feet north of tower 33 (old), about half way between mileposts 36 and 37 from New York, on the east side of the track, a little higher than the top of the rail. (See notes 18 and 21, p. 582.)

R. R. 71.—Is about 100 yards south of *Montrose, Westchester County, N. Y.*, on the east end of the first stone culvert south of the station. (See note 21, p. 582.) Destroyed.

V. O. 12.—Is at *Verplanck, Westchester County, N. Y.*, about $1\frac{1}{2}$ miles north of Montrose, a short distance west of Buchanan's oilcloth factory, on the east side of the track, on a stone over a gutter, and consists of a bolt near the center of the stone, with the letters B. M. under it.

Im'.—Is at *Peekskill, Westchester County, N. Y.*, 20.7 rails south of the station, on a rock on the east side of a cut, 5 feet above the ground, and consists of cross lines on the top of a brass bolt with the letters U. S. cut in the rock beneath it.

V. O. Peekskill.—Is at *Peekskill, Westchester County, N. Y.*, on the stone sill of the door to ladies' waiting room, Peekskill station, and consists of a cross cut on the southwest corner of the sill. In 1902 the rod was held on the smooth surface of the stone in the crotch of the cross nearest the edge of the sill.

V. O. 11.—Is about one-half mile northwest of *Peekskill, Westchester County, N. Y.*, on the abutment at the southwest corner of the bridge over Peekskill Creek, near the center of a large stone. It was reported in 1902 that the bench mark would be available for only a short time longer as the bridge piers were being reconstructed, and this abutment would soon be replaced by new masonry.

R. R. 81.—Is north of *Peekskill, Westchester County, N. Y.*, on a rock *in situ* in a cut 200 feet north of tower No. 39, 6 feet west of west rail. (See note 21, p. 582.)

R. R. 84.—Is $1\frac{1}{2}$ miles south of *Highlands, in Westchester County, N. Y.*, on a small culvert near where milepost 44 from New York should be, and consists of a cross cut on the northwest corner of the west wall. (See note 18, p. 582.)

D₁.—Is about one-half mile south of *Highlands, Putnam County, N. Y.*, 45 feet west of the center of a small stream, just north of the first small rock cut north of mile-post 45, 35 paces (about 3 feet each) east of the east rail, on a large flat rock *in situ* nearly level with the ground. (See notes 3 and 18, pp. 580, 582.)

R. R. 97.—Is about 1 mile north of *Garrison, Putnam County, N. Y.*, 85 meters north of milepost 49, in a cut on the east side of the track. (See notes 18 and 21, p. 582.)

R. R. 99.—Is at *Garrison, Putnam County, N. Y.*, 180 feet north of milepost 50, 680 feet south of the mouth of the tunnel. (See notes 18 and 21, p. 582.)

V. O. 9.—Is at *Cold Spring, Putnam County, N. Y.*, near a standpipe, 5 rails north of the station and just at the south end of a rock cut. (See note 21, p. 582.)

E₁.—Is at *Cold Spring, Putnam County, N. Y.*, about 100 feet west of the railroad station, at the northern terminus of the first north and south street west of the depot, on a ledge of rock about in line with the center of the street and four feet above its general level. (See note 3, p. 580.)

Ik'.—Is near *Fishkill, Dutchess County, N. Y.*, 40½ rails south of the station at the end of a cut on the west side of the track, and consists of a step cut in a sloping rock. Destroyed.

R. R. 118.—Is at *Fishkill, Dutchess County, N. Y.*, near the northern end of the first rock cut north of the station, 623 feet north of milepost 59 and 310 feet south of bridge No. 162, on the east side of the track, and consists of cross on the end of an iron rod about 1½ inches in diameter set vertically in the rock and projecting about 4 or 5 inches. (See note 18, p. 582.)

F₁.—Is 1½ miles north of *Chelsea, Dutchess County, N. Y.*, 10 rails south of tower 53, 9 paces (about 3 feet each) east of the east rail, on top of the northwestern one of four stone piers, about 3 feet high. (See note 3, p. 580.)

Ii'.—Is at *New Hamburg, Dutchess County, N. Y.*, 19½ rails south of a stream crossing the track, on an irregular-shaped rock at the west edge of a gutter. The north edge of the hole is broken out and the cross is just to the east of the hole. (See note 20, p. 582.)

G₁.—Is at *Camelot, Dutchess County, N. Y.*, on the north side of a low rocky point of land, 6 feet from the river bank, 4 feet above high water and about 6 feet west of a bunch of cedar trees, about 60 feet west of the west rail and 12 feet north of the prolongation of the north wall of the railroad station. (See note 3, p. 580.)

H₁.—Is about 1¼ miles south of the railroad station at *Poughkeepsie, Dutchess County, N. Y.*, 2 rails south of tower No. 57, about 40 feet east of the east rail, 12 feet east of the wire fence, on top of a large flat rock 1 foot high. (See note 3, p. 580.)

Ih'.—Is at *Poughkeepsie, Dutchess County, N. Y.*, on the Union street bridge on the west side, in the east face, and consists of a one-half-inch hole surrounded by a triangle, near the top of a large stone. In 1902 the horizontal diameter of the hole was used as the bench mark. Destroyed.

173 A.—Is a bench mark of the United States Geological Survey at *Poughkeepsie, Dutchess County, N. Y.*, on the front face of the City Hall, and consists of an aluminum tablet, stamped "173 A." (See p. 742.)

Ig'.—Is at *Poughkeepsie, Dutchess County, N. Y.*, in the east face of the west side of the arched bridge at the station in the fifth stone above the ground and second from the east edge of the column, and consists of a cross in the top of a brass bolt. The lower left hand side of head of the bolt is broken off and the letters U.S. are cut under it. Destroyed.

Vose.—Is at *Poughkeepsie, Dutchess County, N. Y.*, on the east face of the west side of the arched bridge at the station, north of If', and consists of a cross deeply cut

in the rock. The horizontal mark of the cross is about one-half inch wide, and the estimated center of this line at the intersection was used as the bench mark. Destroyed.

I₁.—Is at *Poughkeepsie, Dutchess County, N. Y.*, at the east door leading to the waiting room of the brick railroad station, the fourth door from the south end of the building, on the north end of the sill. (See note 3, p. 580.)

If'.—Is about 2 miles north of *Poughkeepsie, Dutchess County, N. Y.*, near the State Hospital pumping station, on a rock 4 by 6 feet by 13 inches high and irregular on top, beside the path from the railroad, 8 feet from the track, and 16 feet from the southeast corner of the coal shed. The cross is northeast of the hole. (See note 20, p. 582.)

R. R. 77½.—Is 2 miles south of *Hyde Park, Dutchess County, N. Y.*, about one-half mile north of milepost 77 from New York, about the center of the first rock cut north of this milepost, on the west side of the track, about 6 or 8 feet from the west rail. (See notes 18 and 19, p. 582.)

Ie'.—Is about 1½ miles south of *Hyde Park, Dutchess County, N. Y.*, on the south abutment of bridge No. 220, on the northeast corner of the east end. (See note 21, p. 582.)

R. R. 159.—Is about 1 mile south *Hyde Park, Dutchess County, N. Y.*, 625 feet north of bridge No. 222, 6 feet east of the east rail, in the top of a rock 2 feet high. (See note 19, p. 582.)

R. R. 161.—Is just north of *Hyde Park, Dutchess County, N. Y.*, 210 feet north of bridge No. 223, in a flat rock in the gutter on the east side of the track. (See note 21, p. 582.)

R. R. 162.—Is about three-fourths of a mile north of *Hyde Park, Dutchess County, N. Y.*, 42 meters south of milepost 80 from New York, east of track, about 6 inches below top of rail. (See notes 18 and 21, p. 582.)

R. R. 163.—Is about 1¼ miles north of *Hyde Park, Dutchess County, N. Y.*, five-eighths mile north of milepost 80 from New York, about middle of east wall of culvert 226. (See notes 18 and 21, p. 582.)

R. R. De Witt.—Is at the first cut south of *Staatsburg, Dutchess County, N. Y.*, 193 meters south of milepost 83 from New York, on the east side of track, in a large rock about 2 feet high, just east of the gutter. (See notes 18 and 21, p. 582.) Destroyed.

Iz.—Is about 1 mile south of *Rhinecliff, Dutchess County, N. Y.*, on the north trestle bed of abutment to bridge No. 249, in the southeast corner of the east end. (See note 21, p. 582.) Probably destroyed.

Iyyy.—Is at *Rhinecliff, Dutchess County, N. Y.*, in the rock at the rear of the southeast end of the station. (See note 21, p. 582.)

Iyy.—Is at *Rhinecliff, Dutchess County, N. Y.*, in the rock to the rear of the northeast corner of the station, about 5½ feet above the ground, and consists of a bolt with cross in head leaded into the rock and the letters

U S C S

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cut beneath it.

Iy.—Is about 1¼ miles south of *Barrytown, Dutchess County, N. Y.*, 30 feet north of culvert 261, in a shoulder of rock outside of gutter. (See note 21, p. 582.)

Iv.—Is about $1\frac{3}{4}$ miles north of *Barrytown, Dutchess County, N. Y.*, on the south abutment of bridge No. 269, in the top of the east draw-bed stone, at the east end, and consists of an iron pin, which was filed off a little to give a suitable surface for the rod.

It.—Is about 1 mile north of *Tivoli, Dutchess County, N. Y.*, in the south end of east wall of culvert 279. (See note 21, p. 582.)

Is.—Is about $1\frac{3}{4}$ miles north of *Tivoli, Dutchess County, N. Y.*, on culvert No. 280, near J. H. Livingstone's pumping house, on the south top stone of the east covering. (See note 21, p. 582.)

Ir.—Is about $2\frac{1}{2}$ miles south of *Germantown, Columbia County, N. Y.*, $5\frac{3}{4}$ rails north of milepost 102, on a rock just at the edge of gutter, on the east side of track. (See notes 18 and 21, p. 582.)

Iq.—Is about $1\frac{3}{4}$ miles south of *Germantown, Columbia County, N. Y.*, 73 rails south of milepost 103, on a rock just outside of the gutter, on the east side of the track. (See notes 18 and 21, p. 582.)

Io.—Is near *Germantown, Columbia County, N. Y.*, in the first rock cut below the landing, on the east side of the track, with the letters B. M. in red on the rock. (See note 21, p. 582.)

In.—Is about three-fourths mile south of *Livingston Creek, Columbia County, N. Y.*, on the east end of the north abutment of bridge No. 290, on the southeast top stone. (See note 21, p. 582.)

R. R. 213.—Is about three-fourths mile north of *Linlithgo, Columbia County, N. Y.*, $13\frac{1}{2}$ rails south of tower 80, 19 rails south of milepost 109, near the southeast corner of the stone foundation supporting an overhead bridge, on the west side of the track. (See notes 18 and 21, p. 582.)

Im.—Is at *Catskill Station, Columbia County, N. Y.*, about 8 rails north of milepost 110 and $2\frac{1}{2}$ rails south of the station, on a rock embedded in a bank on the east side of the road crossing the railroad tracks, and directly opposite the road opening in the east line fence, and consists of a half-inch hole drilled in the rock. In 1902, as the mouth of the hole by which it is marked presented too rough a surface to hold the rod upon safely, a faint cross mark was made on the smooth surface of the stone beside the hole on the north side and the rod held upon this mark. (See note 18, p. 582.)

Ik.—Is about 1 mile south of *Hudson, Columbia County, N. Y.*, 13 rails south of milepost 113, and 2 or 3 rails south of Hollenbeck's house, on the south abutment of bridge No. 296, in the top of the east stone at the east end. (See notes 18 and 21, p. 582.)

151 A.—Is a U. S. Geological Survey bench mark at *Hudson, Columbia County, N. Y.*, consisting of the intersection of cross lines on a bronze tablet marked "151 ALBANY," on the northeast corner of the upper station of the Boston and Albany Railway, 1 foot above the platform.

City 14.—Is a bench mark of the city engineers at *Hudson, Columbia County, N. Y.*, at the south entrance to the public square near the upper end of Warren street, on the top of the western post, which is of granite and about 1 foot square, projecting above the sidewalk about 18 inches and apparently set well into the ground. Its top has the form of a flat pyramid, and the bench mark is a 2-inch square cut at the center.

City 29.—Is a bench mark of the city engineers at *Hudson, Columbia County, N. Y.*, at the north or main entrance to the court-house grounds, in the triangle formed

by the sidewalk and the two curved walks leading into the main walk to the court-house entrance, on a monument called No. 2, a marble post 6 inches square with cross mark on top, set into the ground and projecting 4 or 5 inches, and marking the center of the street approaching the court-house. The rod was held upon the smooth surface of the stone in the southeast quadrant formed by the intersecting lines.

J₁.—Is at *Hudson, Columbia County, N. Y.*, on the court-house, on the east side of the portico of the main (north) entrance, on the water table. (See note 3, p. 580.)

V. O. 4.—Is at *Hudson, Columbia County, N. Y.*, under the overhead bridge leading to the docks and Athens ferry, the first bridge above Hudson station, in the west side of the top of the stone pier, under the second iron column from the south, in the first row of columns from the east. (See note 21, p. 582.) Destroyed.

R. R. 223.—Is near *Stockport Station, Columbia County, N. Y.*, on culvert or bridge No. 304, on the east side of the abutment.

D. W. Stockport 1.—Is a Deep Waterways bench mark at *Stockport Station, Columbia County, N. Y.*, on bridge 307, just south of the station, and consists of the center of a square cut on the northwest corner of the south abutment.

R. R. 237.—Is about three-fourths mile north of *Coxsackie Station, Columbia County, N. Y.*, in the top of the east end of culvert 318, about the middle of the wall. (See note 21, p. 582.)

Ih.—Is at *Stuyvesant, Columbia County, N. Y.*, at the door to waiting room on west side of the station, on the southwest corner of the sill, and consists of a cross in a circle cut in the stone.

D. W. Stuyvesant 3.—Is a Deep Waterways bench mark about $1\frac{3}{4}$ miles north of *Stuyvesant, Columbia County, N. Y.*, at *Stuyvesant Lighthouse*, on the north davit for boat, 3 feet north of the northwest corner of the lighthouse, and consists of a cross cut on a bolt.

If.—Is $1\frac{3}{4}$ miles south of *Schodack Landing, Rensselaer County, N. Y.*, a short distance south of milepost 129, on the south abutment of sluice bridge No. 328, at the east end on the northeast corner of the top stone. (See notes 18 and 21, p. 582.)

K₁.—Is about $1\frac{1}{2}$ miles south of *Schodack Landing, Rensselaer County, N. Y.*, 11 rails south of milepost 129, 5 rails north of culvert 329, 8 feet east of the east rail, and about on a level with the top of this rail, on the top of a hard rock projecting from the face of the cut. (See note 3, p. 580.)

D. W. Castleton 1.—Is a Deep Waterways bench mark about $2\frac{1}{2}$ miles south of *Castleton, Rensselaer County, N. Y.*, near signal tower 94 and opposite Mulls Lighthouse, on east side of foundation of water tank, and consists of a cross cut on stone. In 1902 the highest part of the stone in the southeast quadrant formed by the intersecting lines was used as the bench mark.

L₁.—Is at *Castleton, Rensselaer County, N. Y.*, 500 feet south of the railroad station and 20 feet east of the east rail, in the rear (west) wall of the Phibb's Opera House, 21 bricks, or about 5 feet, above the ground, and 4 bricks, or about 33 inches, north of the southwest corner of the building. (See note 13, p. 581.)

Ib.—Is at *Castleton, Rensselaer County, N. Y.*, at the north door on the west side of the New York Central and Hudson River Railroad depot, on the southwest corner of the stone sill, and consists of a cross in a circle cut in the stone.

M₁.—Is at *Rensselaer, Rensselaer County, N. Y.*, about 1 mile south of the railroad station, at the bridge by which the Albany and Hudson "third rail" electric road crosses the New York Central and Hudson River Railroad tracks, on the pier supporting the southwest end of the first bent of the iron trestle approaching the bridge, on the bottom stone (first above ground), on the west corner (one nearest tracks), about 40 feet east of the east rail. (See note 3, p. 580.)

V. O. 1.—Is at *Greenbush (now Rensselaer), Rensselaer County, N. Y.*, in the southern part, at the west side of an overhead bridge, near a pork-packing house, in a rock at the south end of an open ditch where water goes underground. (See note 21, p. 582.)

N₁.—Is at *Rensselaer, Rensselaer County, N. Y.*, about one-half mile south of the railroad station and about 200 yards south of Second avenue, about 100 feet west of the west rail of the New York Central and Hudson River Railroad, on the water table of the brick car house of the electric railway company, on the east side of the building (side nearest tracks), 3 feet from the northeast corner, and 3 feet above ground; being the bottom of a three-quarter-inch square, lettered thus: U S □ B M

Gristmill.—Is at *Greenbush (now Rensselaer), Rensselaer County, N. Y.* (See App. 8 of Report for 1899, p. 848.) It is at the foot of Second avenue (not Second street), on the lower side of the avenue. The letters "B. M." are painted in white besides the cross mark. In 1902 it was reported that the building was no longer used as a gristmill and the superstructure was falling to decay, but the foundation was in a good state of preservation.

(1875).—This is a United States Engineers' bench mark at *Greenbush (now Rensselaer), Rensselaer County, N. Y.* (See App. 8, Report for 1899, p. 848.) In 1902 it was found that the bolt had been removed and a cross mark was made beside the hole on the north side with the horizontal line, which was used as the bench mark, on a level (estimated) with the center of the hole.

L. S. 3.—Is a Deep Waterways bench mark at *Rensselaer, Rensselaer County, N. Y.*, on water tank at south end of viaduct on which Broadway, Rensselaer, crosses the New York Central and Hudson River Railroad tracks, on the southwest corner of the foundation, and consists of a cross on stone. In 1902 the rod was held upon the highest part of the stone in the quadrant of the cross nearest the tracks.

1 (1875).—Is a United States Engineers' bench mark at *Rensselaer (formerly East Albany), Rensselaer County, N. Y.* (See App. 8, Report 1899, p. 848.)

O₁.—Is at *Troy, Rensselaer County, N. Y.*, on the brick building of the Hudson River Terminal Warehouse Company, a prominent building just east of the New York Central and Hudson River Railroad, on Jackson street, in the southern edge of the city, in the front (north) wall, 2 feet from the northwest corner and about 4 feet 8 inches above the ground, in the third brick from the corner and the nineteenth above the stone foundation. (See note 13, p. 581.)

D. W. Troy 2.—Is a Deep Waterways bench mark at *Troy, Rensselaer County, N. Y.*, and is a cross cut at the south end of the east side of the Trojan warehouse of the Fuller & Warren Company, on the northwest corner of Monroe and River streets, on the north end of the stone doorsill, and consists of a cross with a square cut around it.

City 1.—Is a bench mark of the city engineers at *Troy, Rensselaer County, N. Y.*, and described by them as "water table northeast corner of Monroe and First streets." It was used only to obtain a connection with the city leveling.

P₁.—Is at *Troy, Rensselaer County, N. Y.*, on the rear (east) wall of the brick building of the International Shirt and Collar Company, on the northeast corner of Adams and River streets, 5 feet above ground and 18 inches from the southeast corner, in the center of the third brick from the corner and the twentieth above ground. (See note 13, p. 581.)

City 2.—Is a bench mark of the city engineers at *Troy, Rensselaer County, N. Y.*, and described by them as "water table of house on northwest corner of Adams and First streets." The house is a residence, and is No. 197 First street. The half-meter scale was held on top of the water table, flat against the brick wall on the east side, and 2 inches from the southeast corner of the building. An arrowhead was cut into the sloping surface of the water table pointing to the point used.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN RENSSELAER (GREENBUSH)
AND HUDSON, N. Y.

(See Report of Board on Deep Waterways, 1900, Part II, pp. 1016, 1017.)

D. W. Hudson 1.—Is at *Hudson, Columbia County, N. Y.*, and is a knob in a square on the top stone at the northwest corner of the south abutment of bridge No. 298, New York Central and Hudson River Railroad, about 3 200 feet south of the Hudson Railroad station. Destroyed.

V. O. 4.—Is at *Hudson, Columbia County, N. Y.* (See p. 725.)

D. W. Hudson 3.—Is near *Hudson, Columbia County, N. Y.*, and is the center of a square cut in the top stone at the northeast corner of the north wing wall of bridge No. 303 of New York Central and Hudson River Railroad, about 5 500 feet north of the Hudson Railroad station.

D. W. Stockport 1.—Is at *Stockport Station, Columbia County, N. Y.* (See p. 725.)

D. W. Stockport 2.—Is at *Stockport Station, Columbia County, N. Y.*, and is center of a square cut in a large stone on the east side of New York Central and Hudson River Railroad, 10 feet from the east rail and 1 000 feet south of Stockport boat landing.

D. W. Stockport 3.—Is near *Stockport Station, Columbia County, N. Y.*, and is a square cut in the top stone at the northwest corner of bridge No. 311, New York Central and Hudson River Railroad, about 4 200 feet north of Stockport landing.

D. W. Coxsackie.—Is near *Coxsackie Station, Columbia County, N. Y.*, and is a cross in a circle on stone on southeast wing wall of bridge No. 318, New York Central and Hudson River Railroad, about 2 800 feet north of Coxsackie station. Reported of no value in 1902.

Ih.—Is at *Stuyvesant, Columbia County, N. Y.* (See p. 725.)

D. W. Stuyvesant 2.—Is between *Stuyvesant and Castleton, in Columbia County, N. Y.*, center of square cut in stone on southeast corner of stone culvert on New York Central and Hudson River Railroad, about 1 300 feet south of road to Stuyvesant lighthouse.

D. W. Stuyvesant 3.—Is between *Stuyvesant* and *Castleton*, in *Columbia County, N. Y.* (See p. 725.)

D. W. Stuyvesant 4.—Is between *Stuyvesant* and *Castleton*, in *Columbia County, N. Y.*, and is the center of a square cut in the top stone on the southwest corner of bridge No. 326, New York Central and Hudson River Railroad, about 2 600 feet south of the south end of Hotaling Island.

D. W. Stuyvesant 5.—Is between *Stuyvesant* and *Castleton*, in *Columbia County, N. Y.*, opposite New Baltimore Lighthouse, and is the center of a square cut on the natural ledge, 60 feet east of New York Central and Hudson River Railroad track, in line with the south side of warehouse at dock for loading brick, $1\frac{1}{2}$ miles south of Schodack Landing.

D. W. Castleton 1.—Is near *Castleton, Rensselaer County, N. Y.* (See p. 725.)

D. W. Castleton 2.—Is near *Castleton, Rensselaer County, N. Y.*, and is a square cut on stone on the east end of culvert No. 337 of New York Central and Hudson River Railroad about 2 200 feet south of the Castleton Lighthouse.

D. W. Castleton 3.—Is near *Castleton, Rensselaer County, N. Y.*, and is a cross in a circle cut on the stone forming the second step of the southwest wing wall of bridge No. 339 of New York Central and Hudson River Railroad, about 1 mile south of Castleton, N. Y., and opposite Castleton Lighthouse.

Ib.—Is at *Castleton, Rensselaer County, N. Y.* (See p. 725.)

D. W. Castle 5.—Is near *Castleton, Rensselaer County, N. Y.*, and is a square cut in stone at the southwest corner of the north abutment of bridge No. 341 of New York Central and Hudson River Railroad, opposite the lower end of Campbell's Island, and about 1 mile north of Castleton station. Destroyed.

Gristmill.—Is at *Rensselaer (Greenbush), Rensselaer County, N. Y.* (See p. 848, App. 8, Report, 1899, and p. 726, this report.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN WASHINGTON, D. C., AND FOLEY, PA.

(From information furnished by Baltimore and Ohio Railroad.)

Capitol B. M.—At *Washington, D. C.* (See Appendix 8, Report for 1899, page 627.)

P. R. R. 139A.—Is at *Washington, D. C.*, at the north end of the train shed of the Pennsylvania Railroad station, and consists of a square cut on the northeast pedestal.

B. & O. 2.—Is at *Washington, D. C.*, opposite milepost, Washington 1 mile. (See note 39, p. 584.)

B. & O. 3.—Is at *Eckington, D. C.*, between the tracks opposite milepost, Washington 2 miles. (See note 39, p. 584.)

B. & O. 3A.—Is near *Brookland, D. C.*, in the bridge seat between the tracks at the south end of bridge No. 2A, under the grade crossing of the electric car line. (See note 37, p. 584.)

B. & O. 4.—Is at *Brookland, D. C.*, in the bridge seat between the tracks at the north end of the bridge culvert No. 3A. (See note 37, p. 584.)

B. & O. 5.—Is about 1 mile northwest of *Brookland, D. C.*, about $3\frac{1}{6}$ miles from Washington, on the west side of the tracks and on the south side of a box culvert, opposite telegraph pole 3/25. (See note 37, p. 584.)

B. & O. 6.—Is at *Stotts, D. C.*, in the west end of the bridge seat on the south abutment of bridge No. 5B. (See note 37, p. 584.)

B. & O. 7.—Is near *Takoma Park, D. C.*, between the tracks in the bridge seat on the east abutment of bridge 7A. (See note 37, p. 584.)

B. & O. 8.—Is about one-half mile east of *Silver Spring, Montgomery County, Md.*, opposite milepost, Washington 7 miles. (See note 39, p. 584.)

B. & O. 9.—Is about three-tenths mile east of *Woodside, Montgomery County, Md.*, opposite milepost, Washington 8 miles. (See note 39, p. 584.)

B. & O. 10.—Is about three-tenths mile east of *Linden, Montgomery County, Md.*, opposite milepost, Washington 9 miles. (See note 39, p. 584.)

B. & O. 11.—Is about four-tenths mile east of *Capitol View, Montgomery County, Md.*, opposite milepost, Washington 10 miles. (See note 39, p. 584.)

B. & O. 12.—Is at *Kensington, Montgomery County, Md.*, opposite milepost, Washington 11 miles. (See note 39, p. 584.)

B. & O. 13.—Is about four-tenths mile east of *Garrett Park, Montgomery County, Md.*, opposite milepost, Washington 12 miles. (See note 39, p. 584.)

B. & O. 14.—Is about three-tenths mile east of *Windham, Montgomery County, Md.*, opposite milepost, Washington 13 miles. (See note 39, p. 584.)

B. & O. 15.—Is about seven-tenths mile east of *Halpine, Montgomery County, Md.*, opposite milepost, Washington 14 miles. (See note 39, p. 584.)

B. & O. 16.—Is about three-tenths mile west of *Halpine, Montgomery County, Md.*, opposite milepost, Washington 15 miles. (See note 39, p. 584.)

B. & O. 17.—Is about one-half mile east of *Rockville, Montgomery County, Md.*, opposite milepost, Washington 16 miles. (See note 39, p. 584.)

B. & O. 18.—Is about seven-tenths mile east of *Westmore* and about one-half mile west of *Rockville, Montgomery County, Md.*, opposite milepost, Washington 17 miles. (See note 39, p. 584.)

B. & O. 19.—Is about three-tenths mile west of *Westmore, Montgomery County, Md.*, opposite milepost, Washington 18 miles. (See note 39, p. 584.)

B. & O. 20.—Is at *Derwood, Montgomery County, Md.*, opposite milepost, Washington 19 miles. (See note 39, p. 584.)

B. & O. 21.—Is about seven-tenths mile east of *Washington Grove, Montgomery County, Md.*, opposite milepost, Washington 20 miles. (See note 39, p. 584.)

B. & O. 22.—Is about six-tenths mile east of *Gaithersburg, Montgomery County, Md.*, opposite milepost, Washington 21 miles. (See note 39, p. 584.)

B. & O. 23.—Is about one-tenth mile east of *Ward* and about four-tenths mile west of *Gaithersburg, Montgomery County, Md.*, on the south side of the tracks by milepost, Washington 22 miles. (See note 39, p. 584.)

B. & O. 24.—Is about nine-tenths mile west of *Ward, Montgomery County, Md.*, on the south side of the tracks by milepost, Washington 23 miles. (See note 39, p. 584.)

B. & O. 25.—Is about two-tenths mile east of *Clopper, Montgomery County, Md.*, on the south side of the tracks by milepost, Washington 24 miles. (See note 39, p. 584.)

B. & O. 26.—Is at *Waring, Montgomery County, Md.*, on the south side of the tracks by milepost, Washington 25 miles. (See note 39, p. 584.)

B. & O. 27.—Is about one-half mile east of *Germantown, Montgomery County, Md.*, on the south side of the tracks by milepost, Washington 26 miles. (See note 39, p. 584.)

B. & O. 28.—Is about one-half mile west of *Germantown, Montgomery County, Md.*, on the south side of the tracks by milepost, Washington 27 miles. (See note 39, p. 584.)

B. & O. 29.—Is about $1\frac{1}{2}$ miles west of *Darby, Montgomery County, Md.*, on the south side of the tracks by milepost, Washington 28 miles. (See note 39, p. 584.)

B. & O. 30.—Is about one-tenth mile east of *Boys, Montgomery County, Md.*, on the south side of the tracks by milepost, Washington 29 miles. (See note 39, p. 584.)

B. & O. 31.—Is about one-half mile east of *Bucklodge, Montgomery County, Md.*, on the south side of the tracks by milepost, Washington 30 miles. (See note 39, p. 584.)

B. & O. 32.—Is about one-half mile west of *Bucklodge, Montgomery County, Md.*, on the south side of the tracks by milepost, Washington 31 miles. (See note 39, p. 584.)

B. & O. 33.—Is about 1.1 miles east of *Barnesville, Montgomery County, Md.*, on the south side of the tracks by milepost, Washington 32 miles. (See note 39, p. 584.)

B. & O. 34.—Is about one-tenth mile east of *Barnesville, Montgomery County, Md.*, on the south side of the tracks by milepost, Washington 33 miles. (See note 39, p. 584.)

B. & O. 35.—Is about nine-tenths mile west of *Barnesville, Montgomery County, Md.*, on the south side of the tracks by milepost, Washington 34 miles. (See note 39, p. 584.)

B. & O. 36.—Is about seven-tenths mile east of *Dickerson, Montgomery County, Md.*, on the south side of the tracks by milepost, Washington 35 miles. (See note 39, p. 584.)

B. & O. 37.—Is about three-tenths mile west of *Dickerson, Montgomery County, Md.*, on the south side of the tracks by milepost, Washington 36 miles. (See note 39, p. 584.)

B. & O. 38.—Is about 1.3 miles west of *Dickerson, Montgomery County, Md.*, about 225 feet west of milepost, Washington 37 miles, in the bridge seat of culvert, on the south end of the east side. (See note 37, p. 584.)

B. & O. 39.—Is about 1.3 miles east of *Tuscarora, Frederick County, Md.*, on south side of tracks by milepost, Washington 38 miles. (See note 39, p. 584.)

B. & O. 40A.—Is three-tenths mile east of station at *Tuscarora, Frederick County, Md.*, a copper bolt set in south end of east wall of box culvert, about 150 feet west of milepost, Washington 39 miles. (See note 37, p. 584.)

B. & O. 41.—Is about seven-tenths mile west of *Tuscarora, Frederick County, Md.*, on south side of tracks by milepost, Washington 40 miles, cross top vertical rail section. (See note 39, p. 584.)

B. & O. 42.—Is about 1.7 miles west of *Tuscarora, Frederick County, Md.*, on south side of tracks by milepost, Washington 41 miles. (See note 39, p. 584.)

B. & O. 43.—Is about nine-tenths mile east of *Washington Junction, Frederick County, Md.*, on the south side of the tracks by milepost, Washington 42 miles. (See note 39, p. 584.)

B. & O. 44A.—Is at *Point of Rocks, Frederick County, Md.*, on the south side of the tracks, and in the foundation arch at the east end of Point of Rocks Tunnel. (See note 37, p. 584.)

B. & O. 45.—Is about 1 mile southeast of *Catoctin, Frederick County, Md.*, opposite milepost, Baltimore 70 miles. (See note 38, p. 584.)

B. & O. 46.—Is at *Catoctin, Frederick County, Md.*, opposite milepost, Baltimore 71 miles. (See note 38, p. 584.)

B. & O. 47.—Is about 1 mile northwest of *Catoctin, Frederick County, Md.*, opposite milepost, Baltimore 72 miles. (See note 38, p. 584.)

B. & O. 48.—Is about 2 miles west of *Catoctin, Frederick County, Md.*, and about 2 miles east of *Brunswick, Frederick County, Md.*, opposite milepost, Baltimore 73 miles. (See note 38, p. 584.)

B. & O. 49.—Is about $1\frac{1}{2}$ miles from *Brunswick, Frederick County, Md.*, opposite milepost, Baltimore 74 miles, at the east end of the Brunswick Yards. (See note 38, p. 584.)

B. & O. 50.—Is one-half mile east of *Brunswick, Frederick County, Md.*, in the Brunswick Yards, opposite milepost, Baltimore 75 miles. (See note 38, p. 584.)

B. & O. 51.—Is one-half mile west of *Brunswick, Frederick County, Md.*, in the southwest corner of culvert 39 G. (See note 37, p. 584.)

B. & O. 52.—Is about 1 mile east of *Knoxville, Frederick County, Md.*, opposite milepost, Baltimore 77 miles. (See note 37, p. 584.)

B. & O. 53.—Is at *Knoxville, Frederick County, Md.*, on the north side of the tracks by milepost, Baltimore 78 miles. (See note 38, p. 584.)

B. & O. 54.—Is about 2 miles west of *Weverton, Washington County, Md.*, on the west end of the north end wall of culvert No. 39-I. (See note 37, p. 584.)

B. & O. 55.—Is about 1.3 miles west of *Weverton, Washington County, Md.*, 100 feet east of milepost, Baltimore 80 miles; in the native rock on the north side of the tracks. (See note 37, p. 584.)

B. & O. 56.—Is about $2\frac{1}{2}$ miles west of *Weverton, Washington County, Md.*, and near *Harpers Ferry, Jefferson County, W. Va.*; about 400 feet east of Harpers Ferry Tunnel, in a box culvert 300 feet west of milepost, Baltimore 81 miles. (See note 37, p. 584.)

B. & O. 56A.—Is at *Harpers Ferry, Jefferson County, W. Va.*, on the north side of the tracks almost directly across from Harpers Ferry Signal Tower; in the cap stone of the north wing of the west abutment of the bridge. (See note 37, p. 584.)

B. & O. 57.—Is about one-half mile west of *Harpers Ferry, Jefferson County, W. Va.*, in the native rock on the south side of the tracks about 180 feet west of milepost, Baltimore 82 miles. (See note 37, p. 584.)

B. & O. 58.—Is about $1\frac{3}{4}$ miles east of *Engle, Jefferson County, W. Va.*, about 70 feet east of milepost, Baltimore 83 miles, in the native rock on the north side of the tracks and about 8 feet from the tracks. (See note 37, p. 584.)

B. & O. 59.—Is about seven-tenths mile east of *Engle, Jefferson County, W. Va.*, on the south side of the tracks, in the middle of the coping of bridge No. 45. (See note 37, p. 584.)

B. & O. 60.—Is about two-tenths mile west of *Engle, Jefferson County, W. Va.*, and about 30 feet west of milepost, Baltimore 85 miles, in the native rock on the south side of tracks. (See note 37, p. 584.)

B. & O. 61.—Is about $1\frac{1}{4}$ miles west of *Engle, Jefferson County, W. Va.*, about 600 feet east of milepost, Baltimore 86 miles, in the native rock on the north side of the tracks. (See note 37, p. 584.)

B. & O. 62.—Is about 1 mile east of *Duffields, Jefferson County, W. Va.*, in the south end of the east wall of culvert No. 45G. (See note 37, p. 584.)

B. & O. 63.—Is at *Duffields, Jefferson County, W. Va.*, about 50 feet east of milepost, Baltimore 88 miles, in the west end of the north coping of culvert 45L. (See note 37, p. 584.)

B. & O. 64.—Is about three-tenths mile west of *Shenandoah Junction, Jefferson County, W. Va.*, about 400 feet west of milepost, Baltimore 89 miles, in the native rock on the south side of the tracks. (See note 37, p. 584.)

B. & O. 65.—Is about $1\frac{1}{2}$ miles west of *Shenandoah Junction, Jefferson County, W. Va.*, about 500 feet west of milepost, Baltimore 90 miles, in a ledge of rock on the north side of the tracks and opposite telegraph pole 90 4. (See note 37, p. 584.)

B. & O. 66.—Is near *Hobbs, Jefferson County, W. Va.*, about 200 feet west of milepost, Baltimore 91 miles, in the north end of the west abutment of bridge No. 45. (See note 37, p. 584.)

B. & O. 67.—Is about three-tenths mile south of *Kearneysville, Jefferson County, W. Va.*, about 75 feet east of milepost, Baltimore 92 miles, in a rock on the north side of the tracks. (See note 37, p. 584.)

B. & O. 68.—Is about $1\frac{1}{4}$ miles north of *Kearneysville, Jefferson County, W. Va.*, opposite milepost, Baltimore 93 miles. (See note 38, p. 584.)

B. & O. 69.—Is about $1\frac{1}{4}$ miles southeast of *Van Clevesville, Jefferson County, W. Va.*, opposite milepost, Baltimore 94 miles. (See note 38, p. 584.)

B. & O. 70.—Is about two-tenths mile south of *Van Clevesville, Jefferson County, W. Va.*, in a large rock on the north side of the tracks and almost directly behind milepost, Baltimore 95 miles. (See note 37, p. 584.)

B. & O. 71.—Is about eight-tenths mile northwest of *Van Clevesville, Jefferson County, W. Va.*, and 250 feet west of milepost, Baltimore 96 miles, in rock on south side of tracks.

B. & O. 72.—Is about 1.8 miles northwest of *Van Clevesville, Jefferson County, W. Va.*, about 500 feet west of milepost, Baltimore 97 miles, in the west end of the south coping of a culvert. (See note 37, p. 584.)

B. & O. 73.—Is near *Opequon, Jefferson County, W. Va.*, about 600 feet east of milepost, Baltimore 98 miles, on the north side of the tracks, on the west end of the coping of culvert at telegraph pole 97/34. (See note 37, p. 584.)

B. & O. 74.—Is about seven-tenths mile east of *Martinsburg, Jefferson County, W. Va.*, 240 feet west of milepost, Baltimore 99 miles, in the middle of the north coping of bridge No. 49.2. (See note 37, p. 584.)

B. & O. 75.—Is about two-tenths mile west of the station at *Martinsburg, Jefferson County, W. Va.*, about 280 feet east of milepost, Baltimore 100 miles, in the middle of the north coping of an arch. (See note 37, p. 584.)

B. & O. 76.—Is about $1\frac{1}{2}$ miles northwest of that at *Martinsburg, Jefferson County, W. Va.*, opposite milepost, Baltimore 101 miles. (See note 38, p. 584.)

B. & O. 77.—Is about $2\frac{1}{2}$ miles northwest of *Martinsburg, Jefferson County, W. Va.*, about 800 feet west of milepost, Baltimore 102 miles, in the native rock on the north side of the tracks. (See note 37, p. 584.)

B. & O. 78.—Is near *Tabb, Jefferson County, W. Va.*, about 40 feet east of milepost, Baltimore 103 miles, in the native rock. (See note 37, p. 584.)

B. & O. 79.—Is near *Tabb, Jefferson County, W. Va.*, about 200 feet west of milepost, Baltimore 104 miles, in a large rock on the north side of the tracks. (See note 37, p. 584.)

B. & O. 80.—Is about $1\frac{1}{4}$ miles northwest of *Tabb, Jefferson County, W. Va.*, opposite milepost, Baltimore 105 miles. (See note 38, p. 584.)

B. & O. 81.—Is about $1\frac{1}{4}$ miles southeast of *North Mountain, Jefferson County, W. Va.*, about 500 feet west of milepost, Baltimore 106 miles, between the tracks in the bridge seat of the east abutment of bridge No. 52. (See note 37, p. 584.)

B. & O. 82.—Is about two-tenths mile south of the station of *North Mountain, Jefferson County, W. Va.*, 850 feet west of milepost, Baltimore 107 miles, between the tracks in the bridge seat of the east abutment of bridge No. 52½. (See note 37, p. 584.)

B. & O. 83.—Is about one-half mile north of *North Mountain, Jefferson County, W. Va.*, opposite milepost, Baltimore 108 miles. (See note 38, p. 584.)

B. & O. 84.—Is about $1\frac{1}{4}$ miles northwest of *North Mountain, Jefferson County, W. Va.*, about 100 feet east of milepost, Baltimore 109 miles. (See note 38, p. 584.)

B. & O. 85.—Is near *Back Creek, Jefferson County, W. Va.*, opposite milepost, Baltimore 110 miles. (See note 38, p. 584.)

B. & O. 86.—Is west of *Back Creek, Jefferson County, W. Va.*, in the north end of the west abutment of bridge No. 53. (See note 37, p. 584.)

B. & O. 87.—Is in *Jefferson County*, about $1\frac{1}{4}$ miles southeast of *Cherry Run, Morgan County, W. Va.*, opposite milepost, Baltimore 112 miles, between the tracks. (See note 38, p. 584.)

B. & O. 88.—Is in *Jefferson County*, and about six-tenths mile east of *Cherry Run, Morgan County, W. Va.*, in the south end of the bridge seat of the west abutment of bridge No. 54. (See note 37, p. 584.)

B. & O. 89.—Is about one-half mile west of *Cherry Run, Morgan County, W. Va.*, opposite milepost, Baltimore 114 miles. (See note 38, p. 584.)

B. & O. 90.—Is near *Miller, Morgan County, W. Va.*, opposite milepost, Baltimore 115 miles. (See note 38, p. 584.)

B. & O. 91.—Is near *Miller, Morgan County, W. Va.*, opposite milepost, Baltimore 116 miles. (See note 38, p. 584.)

B. & O. 92.—Is about four-tenths mile east of *Sleepy Creek, Morgan County, W. Va.*, opposite milepost, Baltimore 117 miles. (See note 38, p. 584.)

B. & O. 92A.—Is at *Sleepy Creek, Morgan County, W. Va.*, between the tracks in a bridge seat of the east abutment of bridge No. 55. (See note 37, p. 584.)

B. & O. 93.—Is about one-half mile west of *Sleepy Creek, Morgan County, W. Va.*, opposite milepost, Baltimore 118 miles. (See note 38, p. 584.)

B. & O. 94.—Is about $1\frac{1}{2}$ miles west of *Sleepy Creek, Morgan County, W. Va.*, opposite milepost, Baltimore 119 miles. (See note 38, p. 584.)

B. & O. 95.—Is about $2\frac{1}{2}$ miles west of *Sleepy Creek, Morgan County, W. Va.*, opposite milepost, Baltimore 120 miles. (See note 38, p. 584.)

B. & O. 96.—Is about 2 miles east of *Hancock, Morgan County, W. Va.*, opposite milepost, Baltimore 121 miles. (See note 38, p. 584.)

B. & O. 97.—Is about 1 mile east of *Hancock, Morgan County, W. Va.*, opposite milepost, Baltimore 122 miles. (See note 38, p. 584.)

B. & O. 97A.—Is at *Hancock, Morgan County, W. Va.*, on the west end of the north coping of bridge No. 56. (See note 37, p. 584.)

B. & O. 98.—Is about two-tenths mile west of *Hancock, Morgan County, W. Va.*, opposite milepost, Baltimore 123 miles. (See note 38, p. 584.)

F.—Is at *Hancock, Md.* (See App. 8, Report for 1899, p. 561.)

B. & O. 99.—Is about $1\frac{1}{4}$ miles southwest of *Hancock, Morgan County, W. Va.*, opposite milepost, Baltimore 124 miles. (See note 38, p. 584.)

B. & O. 100.—Is about 1 mile northeast of *Round Top, Morgan County, W. Va.*, opposite milepost, Baltimore 125 miles. (See note 38, p. 584.)

B. & O. 101.—Is at *Round Top, Morgan County, W. Va.*, opposite milepost, Baltimore 126 miles. (See note 38, p. 584.)

B. & O. 102.—Is about 1 mile southeast of *Round Top, Morgan County, W. Va.*, 150 feet east of milepost, Baltimore 127 miles, in a rock outcrop on the north side of the tracks. (See note 37, p. 584.)

B. & O. 103.—Is about one-half mile north of *Sir Johns Run, Morgan County, W. Va.*, opposite milepost, Baltimore 128 miles. (See note 38, p. 584.)

B. & O. 104.—Is about one-half mile south of *Sir Johns Run, Morgan County, W. Va.*, 20 feet west of telegraph pole 128/38; copper bolt set in native rock, on south side of tracks. (See note 37, p. 584.)

B. & O. 105.—Is about one-half mile south of *Sir Johns Run, Morgan County, W. Va.*, about 400 feet west of milepost, Baltimore 130 miles; copper bolt set in culvert coping on south side of tracks. (See note 37, p. 584.)

B. & O. 106.—Is about 1 mile east of *Great Cacapon, Morgan County, W. Va.*, about 200 feet east of milepost, Baltimore 131 miles; in a large rock on the north side of the track. (See note 37, p. 584.)

B. & O. 107.—Is near *Great Cacapon, Morgan County, W. Va.*, between the tracks in a bridge seat of the east abutment of bridge No. 57, across Great Cacapon river. (See note 37, p. 584.)

B. & O. 108.—Is about 1 mile west of *Great Cacapon, Morgan County, W. Va.*, opposite milepost, Baltimore 133 miles. (See note 38, p. 584.)

B. & O. 109.—Is about three-tenths mile west of *Woodmont, Morgan County, W. Va.*, opposite milepost, Baltimore 134 miles. (See note 38, p. 584.)

B. & O. 110.—Is about eight-tenths mile east of *Lineburg, Morgan County, W. Va.*, opposite telegraph pole 135/4, in a rock on the south side of the tracks. (See note 37, p. 584.)

B. & O. 111.—Is about two-tenths mile west of *Lineburg, Morgan County, W. Va.*, opposite milepost, Baltimore 136 miles. (See note 38, p. 584.)

B. & O. 112.—Is about $1\frac{1}{4}$ miles south of *Lineburg, Morgan County, W. Va.*, 25 feet east of milepost, Baltimore 137 miles, in a rock on the south side of the tracks.

B. & O. 113.—Is about three-fourths mile east of *Orleans Road, Morgan County, W. Va.*, opposite milepost, Baltimore 138 miles. (See note 38, p. 584.)

B. & O. 114.—Is about three-tenths mile south of *Orleans Road, Morgan County, W. Va.*, opposite milepost, Baltimore 139 miles. (See note 38, p. 584.)

B. & O. 115.—Is near *Rockwells Run, Morgan County, W. Va.*, 500 feet beyond milepost, Baltimore 140 miles, in a rock on the south side of the tracks. (See note 37, p. 584.)

B. & O. 116.—Is at *Doe Gully, Morgan County, W. Va.*, opposite milepost, Baltimore 141 miles. (See note 38, p. 584.)

B. & O. 117.—Is about 1 mile south of *Doe Gully, Morgan County, W. Va.*, opposite milepost, Baltimore 142 miles. (See note 38, p. 584.)

B. & O. 118.—Is about 1 mile northeast of *Hansrotte, Morgan County, W. Va.*, directly opposite milepost, Baltimore 143 miles, in a rock on the south side of the tracks. (See note 37, p. 584.)

B. & O. 119.—Is near *Hansrotte, Morgan County, W. Va.*, opposite milepost, Baltimore 144 miles. (See note 38, p. 584.)

B. & O. 120.—Is about 1 mile west of *Hansrotte, Morgan County, W. Va.*, opposite milepost, Baltimore 145 miles. (See note 38, p. 584.)

B. & O. 121.—Is near *Baird, Morgan County, W. Va.*, opposite milepost, Baltimore 146 miles. (See note 38, p. 584.)

B. & O. 122.—Is about 1 mile southwest of *Baird, Morgan County, W. Va.*, opposite milepost, Baltimore 147 miles. (See note 38, p. 584.)

B. & O. 123.—Is about 1 mile northwest of *Magnolia, Morgan County, W. Va.*, opposite milepost, Baltimore 148 miles. (See note 38, p. 584.)

B. & O. 124.—Is about two-tenths mile east of *Magnolia, Morgan County, W. Va.*, 500 feet beyond milepost, Baltimore 149 miles, on the south side of the tracks in the east end of the coping of bridge No. 47D. (See note 37, p. 584.)

B. & O. 125.—Is about 1 mile southeast of *Magnolia, Morgan County, W. Va.*, opposite milepost, Baltimore 150 miles. (See note 38, p. 584.)

B. & O. 126.—Is about 2 miles south of *Magnolia, Morgan County, W. Va.*, opposite milepost, Baltimore 151 miles. (See note 37, p. 584.)

B. & O. 127.—Is about 1 mile north of *Pawpaw, Morgan County, W. Va.*, opposite milepost, Baltimore 152 miles, in a rock on the south side of the tracks. (See note 37, p. 584.)

B. & O. 128.—Is about eight-tenths mile north of *Pawpaw, Morgan County, W. Va.*, opposite milepost, Baltimore 153 miles. (See note 38, p. 584.)

B. & O. 129.—Is about two-tenths mile south of *Pawpaw, Morgan County, W. Va.*, opposite milepost, Baltimore 154 miles. (See note 38, p. 584.)

B. & O. 130.—Is about $1\frac{1}{4}$ miles south of *Pawpaw, Morgan County, W. Va.*, opposite milepost, Baltimore 155 miles. (See note 38, p. 584.)

B. & O. 131.—Is about 1 mile east of *Little Cacapon, Hampshire County, W. Va.*, about 500 feet east of milepost, Baltimore 156 miles, on the south side of the tracks in the middle stone of the coping of the culvert. (See note 37, p. 584.)

B. & O. 132.—Is near *Little Cacapon, Hampshire County, W. Va.*, about 600 feet east of milepost, Baltimore 157 miles, between the tracks, in a bridge seat of the west abutment of bridge No. 59. (See note 37, p. 584.)

B. & O. 133.—Is about four-fifths of a mile east of *Okonoko, Hampshire County, W. Va.*, opposite milepost, Baltimore 158 miles. (See note 38, p. 584.)

B. & O. 134.—Is about one-fifth of a mile west of *Okonoko, Hampshire County, W. Va.*, and about 800 feet east of milepost, Baltimore 159 miles, in the north end of the west abutment of bridge No. 60. (See note 37, p. 584.)

B. & O. 135.—Is about $1\frac{1}{4}$ miles southwest of *Okonoko, Hampshire County, W. Va.*, opposite milepost, Baltimore 160 miles. (See note 38, p. 584.)

B. & O. 136.—Is about four-tenths of a mile east of *French, Hampshire County, W. Va.*, opposite milepost, Baltimore 161 miles. (See note 38, p. 584.)

B. & O. 137.—Is about eight-tenths mile west of *French, Hampshire County, W. Va.*, between the tracks in a bridge seat of the east abutment of bridge No. 61A. (See note 37, p. 584.)

B. & O. 138.—Is about $1\frac{3}{4}$ miles west of *French, Hampshire County, W. Va.*, near the west end of a cut near where milepost, Baltimore 163 miles, would be if planted; in a rock on the south side of the tracks. (See note 37, p. 584.)

B. & O. 139.—Is near *Green Spring, Hampshire County, W. Va.*, at milepost, Baltimore 164 miles; on the south side of the tracks in the center of the coping of culvert 62. (See note 37, p. 584.)

B. & O. 140.—Is about 1 mile west of *Green Spring, Hampshire County, W. Va.*, opposite milepost, Baltimore 165 miles. (See note 38, p. 584.)

B. & O. 141.—Is about 2 miles west of *Green Spring, Hampshire County, W. Va.*, opposite milepost, Baltimore 166 miles. (See note 38, p. 584.)

B. & O. 142.—Is in *Mineral County*, about 3 miles west of *Green Spring, Hampshire County, W. Va.*, opposite milepost, Baltimore 167 miles. (See note 38, p. 584.)

B. & O. 143.—Is near *Dans Run, Mineral County, W. Va.*, opposite milepost, Baltimore 168 miles. (See note 38, p. 584.)

B. & O. 144.—Is about 1 mile west of *Dans Run, Mineral County, W. Va.*, opposite milepost, Baltimore 169 miles. (See note 38, p. 584.)

B. & O. 145.—Is about one-half mile east of bridge at *Patterson Creek Cut-Off, Mineral County, W. Va.*, opposite milepost, Baltimore 170 miles. (See note 38, p. 584.)

574 Patterson Creek.—Is a bench mark of the United States Geological Survey at *Patterson Creek Cut-Off, Mineral County, W. Va.*, on the south end of the west abutment of the railroad bridge over Patterson Creek, marked 574 feet.

B. & O. 145A.—Is at *Patterson Creek Cut-Off, Mineral County, W. Va.*, between the tracks, in a bridge seat of the east abutment of bridge No. 63. (See note 37, p. 584.)

B. & O. 146.—Is about three-tenths mile northwest of *Patterson Creek, Mineral County, W. Va.*, opposite milepost, Baltimore 171 miles. (See note 38, p. 584.)

B. & O. 147.—Is about one-half mile southeast of *North Branch, Allegany County, Md.*, opposite milepost, Baltimore 172 miles. (See note 38, p. 584.)

B. & O. 147A.—Is at *North Branch, Allegany County, Md.*, between the tracks, in a bridge seat of the west abutment of a bridge over the north branch of the Potomac River. (See note 37, p. 584.)

B. & O. 148.—Is about one-half mile northwest of *North Branch, Allegany County, Md.*, opposite milepost, Baltimore 173 miles. (See note 38, p. 584.)

B. & O. 149.—Is about $1\frac{1}{2}$ miles northwest of *North Branch, Allegany County, Md.*, between the tracks, opposite milepost, Baltimore 174 miles. (See note 38, p. 584.)

B. & O. 150.—Is about 1 mile southeast of *Evitts Creek, Allegany County, Md.*, opposite milepost, Baltimore 175 miles. (See note 38, p. 584.)

B. & O. 151.—Is about one-tenth mile west of *Evitts Creek, Allegany County, Md.*, opposite milepost, Baltimore 176 miles. (See note 38, p. 584.)

B. & O. 152.—Is 1 mile east of *Cumberland, Allegany County, Md.*, opposite milepost, Baltimore 177 miles. (See note 38, p. 584.)

B. & O. 153.—Is in *Cumberland, Allegany County, Md.*, opposite milepost, Baltimore 178 miles. (See note 38, p. 584.)

B. & O. 153A.—Is at *Cumberland, Allegany County, Md.*, in the top of the wall in front of a railing to the right of the stairway leading to the relief department, Queen City Hotel. (See note 37, p. 584.)

I.—Is at *Cumberland, Md.* (See App. 8, Report for 1889, p. 561.)

B. & O. 154.—Is in *Cumberland, Allegany County, Md.*, on the south side of the tracks at the east end of viaduct bridge, Grafton Line. (See note 37, p. 584.)

B. & O. 155.—Is about $1\frac{1}{2}$ miles west of *Cumberland, Allegany County, Md.*, on the south side of the tracks, in the foundation for the overhead foot bridge. (See note 37, p. 584.)

B. & O. 156.—Is about $2\frac{1}{2}$ miles west of *Cumberland, Allegany County, Md.*, in the south end of the east pier of the north span of Pennsylvania Railroad overhead crossing at the Narrows. (See note 37, p. 584.)

B. & O. 157.—Is between the tracks of the east abutment of the first bridge east of *Mount Savage Junction, Allegany County, Md.* (See note 37, p. 584.)

B. & O. 158.—Is at *Mount Savage Junction, Allegany County, Md.*, between the tracks of the east abutment of bridge No. 1, Connellsville Division. (See note 37, p. 584.)

B. & O. 160A.—Is at *Ellerslie, Allegany County, Md.*, between the tracks in a bridge seat of the east abutment of bridge No. $2\frac{1}{2}$. (See note 37, p. 584.)

B. & O. 160B.—Is in Pennsylvania about 2 miles south of *Cooks Mills, Bedford County, Pa.*, and about three-fourths mile north of *Ellerslie, Allegany County, Md.*, between the tracks in a bridge seat of the east abutment of bridge No. 4. (See note 37, p. 584.)

B. & O. 161A.—Is about $1\frac{1}{2}$ miles south of *Cooks Mills, Bedford County, Pa.*, between the tracks in a bridge seat of the east abutment of bridge No. 7. (See note 37, p. 584.)

B. & O. 163A.—Is three-tenths mile north of *Cooks Mills, Bedford County, Pa.*, between the tracks in the east abutment of bridge No. 8. (See note 37, p. 584.)

B. & O. 165A.—Is about 2 miles north of *Cooks Mills, Bedford County, Pa.*, in the south coping of the culvert across from Walley farm, about $11\frac{1}{2}$ miles from Cumberland. (See note 37, p. 584.)

B. & O. 167A.—Is six-tenths mile southeast of *Hyndman, Bedford County, Pa.*, on the south end of the east abutment of bridge No. 9. (See note 37, p. 584.)

P. R. R. 5.—Is three-tenths mile north of *Hyndman, Bedford County, Pa.*, in the bridge seat of the south abutment of a bridge, and consists of a copper bolt.

B. & O. 168A.—Is one-half mile northwest of *Hyndman, Bedford County, Pa.*, between the tracks in the east abutment of bridge No. 10. (See note 37, p. 584.)

B. & O. 170.—Is 600 feet east of *Hoblitzell, Bedford County, Pa.*, in the east end of the south coping of the culvert. (See note 37, p. 584.)

B. & O. 171.—Is about on the county line between *Bedford and Somerset counties, Pa.*, about 1 mile from *Hoblitzell, Bedford County, Pa.*, in a rock on the north side of the tracks, opposite watch box, about 500 feet west of milepost, Cumberland 17 miles. (See note 37, p. 584.)

B. & O. 172.—Is at *Williams, Somerset County, Pa.*, in a boulder on the north side of the tracks, about 500 feet west of milepost, Cumberland 18 miles. (See note 37, p. 584.)

B. & O. 173.—Is one-half mile east of *Fairhope, Somerset County, Pa.*, in a rock on the north side of the tracks, about 200 feet east of milepost, Cumberland 19 miles. (See note 37, p. 584.)

B. & O. 174.—Is about three-fourths mile west of *Fairhope, Somerset County, Pa.*, in a rock on the north side of the track 30 feet east of milepost, Cumberland 20 miles. (See note 37, p. 584.)

B. & O. 174A.—Is about $1\frac{1}{4}$ miles southwest of *Fairhope, Somerset County, Pa.*, between the tracks in the east abutment of bridge No. 17, Falls Cat tunnel. (See note 37, p. 584.)

B. & O. 175.—Is about one-third mile north of *Foley, Somerset County, Pa.*, in the north end of the east abutment of bridge No. 19A. (See note 37, p. 584.)

B. & O. 176.—Is at *Foley, Somerset County, Pa.*, between the tracks in the east abutment of bridge No. 19B. (See note 37, p. 584.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN ELMIRA, N. Y., AND WILLIAMSPORT, PA., 1897.

(From information furnished by U. S. Geological Survey.)

857 A.—Is at *Elmira, Chemung County, N. Y.* (See p. 861, App. 8, Report for 1899.)

1067 H.—Is 7.1 miles south of *Elmira, Chemung County, N. Y.*, in the wall of the creek and cattle pass culvert, on the west side of the railroad. (See note 46, p. 584.)

1265 H.—Is at *Snedekerville, Bradford County, Pa.*, in the foundation wall of the store and railroad station, 50 feet west of the railroad. (See note 46, p. 584.)

1099 H.—Is 1.8 miles south of *Columbia Crossroads, Bradford County, Pa.*, on the top of the north wall of the culvert and cattle pass, on the west side of the railroad. (See note 46, p. 584.)

1139 H.—Is two-tenths mile south of the station at *Troy, Bradford County, Pa.*, in the top of the coping stone of the foundation, on the north side of the railroad water tank. (See note 46, p. 584.)

1358 H.—Is one-half mile south of *Cowley, Bradford County, Pa.*, in the top of the coping stone of the railroad creek culvert on the east side of the railroad. (See note 46, p. 584.)

1246 H.—Is four-tenths mile south of *Canton, Bradford County, Pa.*, in the south abutment of an old railroad bridge masonry, 20 feet east of the railroad. (See note 50, p. 585.)

966 H.—Is at *Roaring Branch, Lycoming County, Pa.*, 600 feet north of the station, on the bridge seat of the east abutment of a steel highway bridge. (See note 50, p. 585.)

851 H.—Is two-tenths mile north of the station at *Ralston, Lycoming County, Pa.*, in the south abutment of the west side of the railroad bridge. (See note 46, p. 584.)

732 H.—Is one-tenth mile north of *Fields, Lycoming County, Pa.*, in the south abutment of the east side of the iron railroad bridge. (See note 46, p. 584.)

620 H.—Is seven-tenths mile south of *Powys, Lycoming County, Pa.*, in the north-west wing abutment of a small creek culvert. (See note 50, p. 585.)

528 H.—Is at *Williamsport, Lycoming County, Pa.*, on the city hall in the front face by the main entrance. (See note 50, p. 585.)

P. R. R. 47.—Is at *Williamsport, Lycoming County, Pa.* (See p. 604.)

P. R. R. 46.—Is at *Williamsport, Lycoming County, Pa.* (See p. 604.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN SALAMANCA, N. Y., AND IRVINGTON, PA., 1899, 1902.

(From information furnished by U. S. Geological Survey.)

1391 D.—Is at *Salamanca, Cattaraugus County, N. Y.* (See p. 860, App. 8, Report for 1899.)

1340 D.—Is 0.56 mile southwest of *Red House, Cattaraugus County, N. Y.*, on the southeast corner of bridge number 126, on the foundation coping stone. (See note 47, p. 584.)

1316 D.—Is 1.03 miles southwest of *Quaker Bridge, Cattaraugus County, N. Y.*, at the northeast corner of the steel truss bridge, on the foundation coping stone. (See note 47, p. 584.)

Bridge 121.—Is ten one-hundredths mile west of *Wolf Run, Cattaraugus County, N. Y.*, on the southeast corner of bridge No. 121, on the parapet coping stone, and is a chiseled square.

1281 D.—Is at *Corydon, Warren County, Pa.*, thirty-three one-hundredths mile north of the station; at the southeast corner of the steel bridge over Willow Creek, on the foundation coping stone. (See note 47, p. 584.)

Bridge 758.—Is 2.04 miles south of *Corydon, Warren County, Pa.*, at the southeast corner of bridge No. 758, on the foundation coping stone, and is a chiseled square.

1253 D.—Is 1.4 miles south of *Sugar Run, Warren County, Pa.*, on the southwest corner of bridge No. 114, on the foundation coping stone. (See note 47, p. 584.)

Bridge 113.—Thirteen one-hundredths mile south of station at *Sugar Run, Warren County, Pa.*, southwest corner of bridge 113, on parapet coping stone, and is a chiseled square.

1229 D.—Is at *Kinzua, Warren County, Pa.*, 500 feet south of the station, at the northwest corner of the steel truss bridge across Kinzua Creek, 2.5 feet west of the chord, on the foundation stone. (See note 47, p. 584.)

Bridge.—Is 400 feet south of *Tuttlestown, Warren County, Pa.*, at the northeast corner of the four-span bridge over Allegheny River, on the parapet coping stone, and is a chiseled square.

Bridge 644.—Is eighty one-hundredths mile southwest of *Great Bend, Warren County, Pa.*, on the northeast corner of bridge No. 644, on the foundation stone, and is a chiseled square.

1205 D.—Is two-tenths mile southeast of *Hemlock, Warren County, Pa.*, at the northwest corner of steel girder bridge No. 110, 5 inches from the bed plate, on the foundation coping stone. (See note 47, p. 584.)

1193 D.—Is near *Warren, Warren County, Pa.*, 300 feet south of the station, at the northwest corner of the double track steel truss bridge No. 54 over Allegheny River, on coping of the parapet wall. (See note 47, p. 584.)

P. R. R. 33.—Is at *Warren, Warren County, Pa.*, at the station, in the doorsill of the waiting room, and is a copper plug.

P. R. R. 37.—Is 650 feet east of *Jacksons Crossing, Warren County, Pa.*, on the southwest corner of bridge No. 53, on the foundation coping stone, and is a copper plug.

P. R. R. 38.—Is 1.48 miles east of *Irvineton, Warren County, Pa.*, on the southwest corner of a small girder bridge No. 52, on the top of the second step from the top of the wing wall, and is a copper plug.

P. R. R. 39.—Is three-fourths of a mile east of *Irvineton, Warren County, Pa.*, on the southeast corner of the open drain on the foundation coping stone, and is a copper plug.

1167 D.—Is twenty-four one-hundredths mile east of the station at *Irvineton, Warren County, Pa.*, on the east abutment of the double track steel girder bridge No. 50 across Brokenstraw Creek, on the north side of the middle girder, on the foundation coping stone. (See note 47, p. 584.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN IRVINETON AND FRANKLIN,
PA., 1899.

(From information furnished by U. S. Geological Survey.)

1167 D.—Is at *Irvineton, Warren County, Pa.*

1135 D.—Is at *Thompson, Warren County, Pa.*, one-eighth mile northeast of the Western, New York and Pennsylvania station, at the east end of the south abutment of a small girder bridge, No. 85A, on the coping stone. (See note 47, p. 584.)

1116 D.—Is at *Tidioute, Warren County, Pa.*, 100 feet east of the station, 270 feet south of the center of the track at the north end of the suspension road bridge across the Allegheny River, on the face of the west cable anchor. (See note 47, p. 584.)

1098 D.—Is at *Trunkysville, Forest County, Pa.*, 350 feet south of the flag post, 45 feet west of the center of the main track, $4\frac{1}{2}$ feet south from a large chestnut tree, in a large boulder. (See note 47, p. 584.)

1086 D.—Is two-tenths mile north of *Hickory, Forest County, Pa.*, at the northeast corner of the steel truss combination railroad and highway bridge across the Allegheny River, on the foundation wall. (See note 47, p. 584.)

1063 D.—Is at *Tionesta, Forest County, Pa.*, 180 feet north of station, 70 feet east of the main track, at the southwest corner of the highway bridge across the Allegheny River, on the coping stone. (See note 47, p. 584.)

1042 D.—Is three-tenths mile north of *President (flag station), Venango County, Pa.*, 17.5 feet east of the center of the track, 2.4 feet below the top of rail, on the top of a large boulder 5 feet high, 12 feet long. (See note 47, p. 584.)

1030 D.—Is at *Oleopolis, Venango County, Pa.*, three-tenths mile northeast of the flag station, at the northwest corner of the one-span steel truss bridge, No. 74, 13 feet north of the center of the track, on the coping stone of the abutment wall. (See note 47, p. 584.)

1009 P.—Is at *South Oil City, Venango County, Pa.*, four-tenths mile east of the Allegheny Valley Railroad station, on the bridge seat at the northeast corner of a large three-span truss bridge (Allegheny Valley Railroad) across Allegheny River, 7 feet north of the center of the track, 5.1 feet below the top of the rail, and 6 inches from the end of the chord. (See note 48, p. 584.)

987 P.—Is at *Franklin, Venango County, Pa.* (See p. 864, App. 8, Report for 1899.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN BINGHAMTON AND
HANCOCK, N. Y., 1900.

(From information furnished by U. S. Geological Survey.)

867 A.—Is at *Binghamton, Broome County, N. Y.* (See App. 8, Report for 1899, p. 862.)

860 A.—Is near *Langdon, Broome County, N. Y.*, 1 000 feet north of the station, on a creek culvert, at the top of the south abutment on the west side. (See note 49, p. 584.)

Signal tower.—Is half a mile south of *Kirkwood, Broome County, N. Y.*, on the retaining wall of the signal tower, 7 feet northwest of the tower house, and is a railroad spike in the northeast corner in the top of the timber of the retaining wall.

880 A.—Is at *Great Bend, Susquehanna County, Pa.*, 200 feet north of the station, on the railroad water tank, in the face of the southeast foundation stone. (See note 49, p. 584.)

893 A.—Is at *Hickory Grove, Susquehanna County, Pa.*, 600 feet north of the station on the top of the southeast abutment of an iron bridge.

955 A.—Is 1.3 miles south of *Susquehanna, Susquehanna County, Pa.*, on the long iron bridge over highway and stream, at the top of the west side of the south abutment. (See note 49, p. 584.)

1026 A.—Is 1 mile west of *Deposit, Broome County, N. Y.*, in the south wing of the east abutment of the iron bridge over the river. (See note 49, p. 584.)

978 A.—Is 4.4 miles south of *Deposit, Broome County, N. Y.*, on the west side of the top of the bridge seat of the north abutment of an iron bridge. (See note 49, p. 584.)

924 A.—Is seven-tenths mile northwest of *Hancock, Delaware County, N. Y.*, on top of southeast abutment of steel railroad bridge, on the east side of the track. (See note 49, p. 584.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN HANCOCK AND POUGH-
KEEPSIE, N. Y., 1900.

(From information furnished by U. S. Geological Survey.)

924 A.—Is near *Hancock, Delaware County, N. Y.*

882 A.—Is 1.1 miles south of *Stockport, Delaware County, N. Y.*, on bridge No. 17, on the west abutment, on the south side, on the top of the second step. (See note 49, p. 584.)

865 A.—Is at *Lordville, Delaware County, N. Y.*, at railroad station, on the suspension bridge over the Delaware River, in the face of the north abutment. (See note 49, p. 584.)

834 A.—Is at *Long Eddy, Sullivan County, N. Y.*, 400 feet north of the station, on a girder bridge, on the east side of the south abutment, in the top of the bridge seat. (See note 49, p. 584.)

801 A.—Is 1 mile south of *Hankins, Sullivan County, N. Y.*, 100 feet west of milepost "J. C. 141," south of the railroad, in the west abutment of a small bridge over a creek. (See note 49, p. 584, except the tablet is aluminum.)

780 A.—Is at *Callicoon, Sullivan County, N. Y.*, 900 feet south of station, on the railroad girder bridge over Delaware River, on the top of the east side of the north abutment. (See note 49, p. 584.)

746 A.—Is at *Cochecton, Sullivan County, N. Y.*, 100 feet north of the station, on the railroad bridge over the highway, on the top of the east side of the north abutment. (See note 49, p. 584.)

718 A.—Is at *Narrowsburg, Sullivan County, N. Y.*, 600 feet west of the station, on the north side of a rock cut, 100 feet west of the east end of the cut. (See note 49, p. 584.)

665 A.—Is at *Westcoolang Park, Pike County, Pa.*, 100 feet east of station, on a railroad bridge, on the top of the west end of the abutment on the south side. (See note 49, p. 584.)

648 A.—Is at *Shohola, Pike County, Pa.*, between Shohola Glen and store, on the stone steps opposite the east end of the station, and the third step from the bottom. (See note 49, p. 584.)

573 A.—Is two-tenths mile east of *Pondeddy, Pike County, Pa.*, 350 feet east of station whistling post, in the face of the rock of a cut on the south side of the railroad. (See note 49, p. 584.)

491 A.—Is three-tenths mile east of *Mill Rift, Pike County, Pa.*, on the long iron bridge over Delaware River, on south side of the top of the west abutment. (See note 49, p. 584.)

456 A.—Is at *Port Jervis, Orange County, N. Y.*, on the Erie railroad bridge over East Main street, at the top of west side of the south abutment, on the first step below the bridge seat. (See note 49, p. 584.)

780 A.—Is at *Guymard, Orange County, N. Y.*, 600 feet north of the station, on a railroad culvert, on the top of the west side of the north abutment. (See note 49, p. 584.)

861 A.—Is at *Otisville, Orange County, N. Y.*, 500 feet west of station, on a small railroad bridge over a private road, at the north side of the west abutment, on the top of bridge seat. (See note 49, p. 584.)

558 A.—Is at *Middletown, Orange County, N. Y.*, Clemson Brothers' saw shop, in front face, left of office entrance, in brickwork. (See note 49, p. 584.)

408 A.—Is at *Campbell Hall, Orange County, N. Y.*, on Campbell Hall Hotel, in the brickwork of the south face. (See note 49, p. 584.)

National Bank.—Is at *Walden, Ulster County, N. Y.*, Walden National Bank, in the southwest corner, and is an aluminum tablet marked 376.

Centerville Hotel.—Is at *Loyd, Ulster County, N. Y.*, Centerville Hotel, in the southeast corner, and is a bronze tablet marked 359.

Bridge.—Is at *Highland, Ulster County, N. Y.*, 100 feet south of station, on the top of the bridge abutment, at the north end, on the east side, marked □ 283.

Bridge.—Is at *Poughkeepsie, Dutchess County, N. Y.*, Poughkeepsie Bridge, on the south end of the west abutment, on the southwest corner of the top stone, and is a chisel mark.

173 A.—Is at *Poughkeepsie, Dutchess County, N. Y.*, at the corner of Main and Washington streets, in the front face of the city hall, and is an aluminum tablet marked 173 A.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN SIDNEY AND HANCOCK,
N. Y., 1901.

(From information furnished by U. S. Geological Survey.)

Tel. Pole 991.—Is at *Sidney, Delaware County, N. Y.* (See p. 744.)

1344 A.—Is at *Maywood, Delaware County, N. Y.* (Sidney Center), on trestle 216, under the north side of the third trestle tower from the east end. (See note 51, p. 585.)

1766 A.—Is about thirty-seven one-hundredths mile northwest of *Northfield, Delaware County, N. Y.*, at the south end of zigzag tunnel, 30 feet south of the south end, on the west side of the track about 6 feet above the rail, on the vertical face of the rock. (See note 51, p. 585.)

Bridge.—Is 5.95 miles southeast of *Northfield, Delaware County, N. Y.*, at the southeast corner of the bridge, in the foundation stone, and is a chiseled square.

1215 A.—Is at *Walton, Delaware County, N. Y.*, at the southwest corner of North and Gardiner streets, at the northeast corner of Ogden Free Library, on the east face of the corner stone of the water table. (See note 51, p. 585.)

1214 A.—Is five-tenths mile north of *Rock Rift, Delaware County, N. Y.*, 150 feet south of the crossing, on the east side of the track, 4 feet above the rail, on the face of the ledge. (See note 51, p. 585.)

990 A.—Is seventeen one-hundredths mile west of *Cadosia, Delaware County, N. Y.* on the west abutment of trestle B1, on the parapet wall, on the south corner of the, coping stone. (See note 51, p. 585.)

Bridge 18.—Is three-tenths mile south of the station at *Hancock, Delaware County, N. Y.*, on bridge No. 18, at the southeast corner, on the foundation stone, and is a chiseled square.

924 A.—Is near *Hancock, Delaware County, N. Y.* (See p. 741.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN UTICA AND BAINBRIDGE,
N. Y., 1901.

(From information furnished by U. S. Geological Survey.)

D. W. Utica 2.—Is at *Utica, Oneida County, N. Y.* (See p. 675.)

P. O.—Is at *Utica, Oneida County, N. Y.*, on the post-office, on the west side of the eastern of the two rear entrances in the basement area, on the building wall, and is a bronze tablet marked 419 feet.

Seneca Street Bridge.—Is at *Utica, Oneida County, N. Y.*, on the Seneca Street Bridge, on the top of the southwest corner of lower step of the west wing of the towpath (north) abutment, and is a chiseled square.

Whitesboro Street Bridge.—Is at *Utica, Oneida County, N. Y.*, on the Whitesboro Street Bridge, on the top of the southeast corner of the stone platform at the base of the east stairs of the towpath abutment, about 3 feet above the towpath, and is a chiseled circle with the letters "B. M." marked on the south face of the stone.

L. S. 91.—Is at *Utica, Oneida County, N. Y.* (See p. 666.)

L. S. 92.—Is at *Utica, Oneida County, N. Y.* (See p. 666.)

633A.—Is fifty-four one-hundredths mile south of *Washington Mills, Oneida County, N. Y.*, on the southeast corner of bridge No. 76, on the northeast corner of the stone under the bed plate. (See note 51, p. 585.) (Reported as possibly disturbed.)

Station.—Is at *Richfield Junction, Oneida County, N. Y.*, on the new station, in the baseboard under the ticket office, marked + B. M.

1221 A.—Is thirty-six one-hundredths mile south of *Richfield Junction, Oneida County, N. Y.*, on the south end of the foundation wall of a wooden trestle bent, on the west side of the track. (See note 49, p. 584.)

1152 A.—Is at *Leonardsville, Madison County, N. Y.*, at the southeast corner of the milk station, in the face of the corner stone of the foundation. (See note 51, p. 585.)

U. S. B. M.—Is at *West Edmeston, Madison County, N. Y.*, on the highway bridge, at the northeast corner of the bridge, on the coping stone of the east abutment, and is a chisel mark U. S. □ B. M.

Bridge.—Is 1.55 miles south of *West Edmeston, Madison County, N. Y.*, on the southwest corner of the highway bridge, on the coping stone of the foundation, and is a chiseled square.

1110 A.—Is two-tenths mile east of *South Edmeston, Madison County, N. Y.*, at the northeast corner of the highway bridge, on the top stone of the foundation. (See note 51, p. 585.)

1089 A.—Is at *New Berlin, Chenango County, N. Y.*, on the New York, Ontario and Western bridge, No. 52, near the northwest end of the bridge, on the top of the coping stone of the center pier. (See note 51, p. 585.)

Bridge.—Is 1.01 miles south of *New Berlin, Chenango County, N. Y.*, on the stone arch highway bridge, on the south side, on the face of the keystone, and is a chiseled cross.

Bridge.—Is seventy-seven one-hundredths mile north of *South New Berlin, Chenango County, N. Y.*, southeast of the railroad crossing, at the south end of the stone arch highway bridge on the west side wall, and is a chiseled square.

1059 A.—Is at *South New Berlin, Chenango County, N. Y.*, on the Baptist Church, near the northwest corner of the building, near the north side of the entrance, under the front window, in the third course of brick above the water table. (See note 51, p. 585.)

Bridge.—Is 1.21 miles south of *New Berlin, Chenango County, N. Y.*, and is a chiseled square on the southeast corner of abutment of railroad bridge.

Bridge.—Is 1.77 miles south of *Holmesville, Chenango County, N. Y.*, and is a chiseled square on the southeast abutment of a wooden railroad bridge.

1035 A.—Is at *Mount Upton, Chenango County, N. Y.*, on the east side of the Methodist Church, on the north side of the front entrance, in the third course of foundation stone above the ground. (See note 51, p. 585.)

Bridge.—Is 2.38 miles south of *Mount Upton, Chenango County, N. Y.*, at the northwest corner of the large iron highway bridge over Unadilla River, 150 feet south of the track, and is a chiseled square on the coping, marked U S.

Tel. Pole 991.—Is at *Sidney, Delaware County, N. Y.*, 150 feet west of the crossing of the Delaware and Hudson and the New York, Ontario and Western railroads, and is a railroad spike in a large telegraph pole, marked with paint 991.

989 A.—Is 2.7 miles east of *Bainbridge, Chenango County, N. Y.* (See p. 862, App. 8, Report for 1899.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN CHARLOTTE AND HORNELLSVILLE, N. Y., 1901-2.

(From information furnished by U. S. Geological Survey.)

1 (1874).—Is at *Charlotte, Monroe County, N. Y.*, 0.22 mile northeast of the New York Central Railroad station, on the old lighthouse, on the upper side of the water table at the south-southeast angle east of the south window, and is a chiseled circle.

2 (1874).—Is at *Charlotte, Monroe County, N. Y.*, on the top of the circular wall of the railroad turntable, southwest part of the wall, and is marked B X M.

Bridge 87.—Is at *Rochester, Monroe County, N. Y.*, on highway bridge No. 87, over Barge Canal, on the south abutment of the east wing, on the lowest step, and is a chiseled square.

N. Y. 457.—Is at *Rochester, Monroe County, N. Y.*, on Rowe street bridge No. 86, near the towpath, on the foundation under the east tower, was established by the New York State engineers, and is a chiseled square.

Rowe Street Bridge.—Is at *Rochester, Monroe County, N. Y.*, on the Buffalo, Rochester and Pittsburg Railroad bridge, on the southwest corner of the bridge, on the parapet stone, and is a chiseled square.

Bridge.—Is at *Rochester, Monroe County, N. Y.*, on the Buffalo, Rochester and Pittsburg Railroad bridge over the Niagara Falls Railroad, on the southwest corner of the bridge, on the parapet wall, and is a chiseled square.

Culvert.—Is at *Rochester, Monroe County, N. Y.*, 0.22 mile south of the Buffalo, Rochester and Pittsburg Railroad crossing, west of the track, near the north end of a stone culvert, and is a chiseled square.

Bridge.—Is at *Genesee Junction, Monroe County, N. Y.*, west side of grade crossing of West Shore Railroad, on the northeast corner of the Pennsylvania Railroad bridge, near northwest corner of parapet stone, and is a chiseled square.

Bridge.—Is 1.49 miles south of *Genesee Junction, Monroe County, N. Y.*, on the southeast corner of small bridge over old canal, on coping of foundation wall; chiseled square.

Lock.—Is 0.72 mile south of *Whites, Monroe County, N. Y.*, on an old lock, on the west side wall, at the south quoin between the anchors, and is a chiseled square.

Bridge.—Is 640 feet south of *Severance, Monroe County, N. Y.*, on the northwest corner of a bridge over the canal, on the coping stone, and is a chiseled square.

Bridge.—Is 2.23 miles south of *Severance, Monroe County, N. Y.*, on the northeast corner of a highway bridge over the canal, on the coping stone, and is a chiseled square.

537 R.—Is at *Scottsville, Monroe County, N. Y.*, 800 feet north of the station, on the south side of a creek overflow dam, on the top of the stone pier, and is a bronzed tablet marked 537 Rochester, 1902.

Culvert.—Is 1.75 miles south of *Scottsville, Monroe County, N. Y.*, on the southwest corner of a culvert, on the coping stone, and is a chiseled square.

Bridge.—Is 2.54 miles south of *Scottsville, Monroe County, N. Y.*, on an overhead bridge at the crossing of the Lehigh Valley Railroad, on the southwest corner, on the eleventh step from the top of the wing wall, on the extreme southeast corner, and is a paint mark.

Bridge 34.—Is at *Honeoye Junction, Livingston County, N. Y.*, on bridge No. 34, of the Lehigh Valley Railroad, on the northeast corner, near the corner of the foundation coping stone, and is a chiseled square.

Bridge.—Is 240 feet north of *Genesee Valley Junction, Livingston County, N. Y.*, at northeast corner of a bridge, on the coping stone, and is a painted square.

Stone.—Is 0.80 mile south of *Genesee Valley Junction, Livingston County, N. Y.*, on the east side of the track, on a stone, and is a painted square.

Cattle Pass.—Is 0.59 mile north of *Avon, Livingston County, N. Y.*, on the southwest corner of a cattle pass, on the coping of the foundation, and is a painted square.

Tel. Pole.—Is at *Avon, Livingston County, N. Y.*, 700 feet north of the station on west side of the track, and is a spike in a telegraph pole.

Bridge.—Is 0.73 mile west of *Avon, Livingston County, N. Y.*, on the northwest corner of a bridge over Genesee River, on the foundation coping stone, and is a painted square.

Lock.—Is 1.42 miles north of *Fowlerville, Livingston County, N. Y.*, on the remains of an old canal lock, on the west wall near the center of the top stone, and is a chiseled square.

Tel. Pole.—Is at *Fowlerville, Livingston County, N. Y.*, 75 feet north of the station, at the northwest corner of the road crossing, and is a spike in a telegraph pole.

Culvert.—Is 1.02 miles south of *York, Livingston County, N. Y.*, on the east side of the track, on the coping stone of a culvert, and is a chiseled square.

Wall.—Is 660 feet north of *Piffard, Livingston County, N. Y.*, on west side of the track, on the east side wall of a drain from the salt works, on the coping stone, and is a chiseled square.

Culvert.—Is 1.91 miles south of *Piffard, Livingston County, N. Y.*, east side of track, on southeast corner of large culvert wall, on coping stone, and is a chiseled square.

Bridge 5.—Is 0.53 mile south of *Cuylerville, Livingston County, N. Y.*, on the northwest corner of bridge No. 5, on the northwest corner of parapet wall, and is a chiseled square.

575 R.—Is near *Mount Morris, Livingston County, N. Y.*, 200 feet east of Delaware, Lackawanna and Western station, at the northwest corner of the railroad bridge, on coping stone, and is an aluminum tablet marked 575 Rochester, 1901.

Bridge.—Is near *Mount Morris, Livingston County, N. Y.*, 0.48 mile south of the Erie Railroad station, on the southeast corner of the Pennsylvania Railroad bridge, near the northeast corner of the parapet wall, and is a chiseled square.

Bridge.—Is 0.30 mile north of *Sonyea, Livingston County, N. Y.*, on the southwest corner of girder bridge over highway, top of the parapet wall, and is a chiseled square.

Bridge 13.—Is 2.38 miles south of *Sonyea, Livingston County, N. Y.*, southeast corner of bridge No. 13, near the northeast corner of the parapet wall, and is a chiseled square.

Bridge 15.—Is 0.61 mile north of *Tuscarora, Livingston County, N. Y.*, southeast corner of bridge No. 15, northeast corner of the parapet wall, and is a chiseled square.

773 R.—Is 100 feet south of *Tuscarora, Livingston County, N. Y.*, southeast corner of bridge, on the top of the parapet wall, and is a bronze tablet marked 773 Rochester, 1902.

Tree.—Is at *Nunda Junction, Livingston County, N. Y.*, 100 feet east of station, and is a spike in the root of an elm tree.

944 R.—Is at *Nunda, Livingston County, N. Y.*, Fireman's Hall, front face, 1 foot from the west corner, in the water table, and is an aluminum tablet marked 944 Rochester, 1902.

Culvert.—Is 4.27 miles southeast of *Nunda, Livingston County, N. Y.*, 60 feet south of crossing, west side of track, on coping stone of box drain, and is a chiseled square.

Culvert.—Is 200 feet southeast of *Ross Crossing, Livingston County, N. Y.*, between the tracks, on the north side of an open culvert, on the coping stone, and is a chiseled square.

Bridge.—Is 1.7 miles north of *Swains, Allegany County, N. Y.*, on the southeast corner of the steel girder bridge over a small stream, on the parapet wall, and is a chiseled square.

1316 R.—Is at *Swains, Allegany County, N. Y.*, 200 feet south of Erie station, on the northwest corner of the foundation wall of a small union church, and is an aluminum tablet marked 1316 Rochester, 1902.

Bridge 9.—Is 0.40 mile southeast of *Swains, Allegany County, N. Y.*, on the northwest corner of bridge No. 9, on the coping stone foundation, and is a chiseled square.

Bridge 8.—Is 1.79 miles southeast of *Swains, Allegany County, N. Y.*, on the northeast corner of bridge No. 8, on the parapet wall, and is a chiseled square.

Bridge 6¼.—Is 0.19 mile northeast of *Canaseraga, Allegany County, N. Y.*, northeast corner of bridge No. 6¼, on the foundation stone, and is a chiseled square.

1253 R.—Is at *Canaseraga, Allegany County, N. Y.*, on the southwest corner of the Kingston Hotel, in the water table, and is an aluminum tablet, marked 1253 Rochester 1902.

Tel. Pole.—Is at *Burns, Steuben County, N. Y.*, east of the station, and is a spike in the foot of a telegraph pole.

Culvert.—Is one-half mile southeast of *Burns, Steuben County, N. Y.*, north side of track, on east wall of open culvert; chiseled square.

1188 R.—Is at *Arkport, Steuben County, N. Y.*, on the southeast corner of the Methodist Protestant Church, in the foundation stone, and is an aluminum tablet, marked 1188 Rochester 1902.

Bridge 4.—Is 1.91 miles south of *Arkport, Steuben County, N. Y.*, southeast corner of bridge No. 4, on wing wall; chiseled square.

Bridge 1.—Is 0.66 mile north of station at *Hornellsville, Steuben County, N. Y.*, on the southeast corner of bridge No. 1, on the foundation stone, and is a chiseled square.

1141 D.—Is 0.7 mile east of the station at *Hornellsville, Steuben County, N. Y.*, at the northeast corner of iron railroad bridge, on the foundation wall, and is an aluminum tablet, marked 1141 D.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN BUFFALO AND DUNKIRK, N. Y.,
1902.

(From information furnished by U. S. Geological Survey.)

L. H.—Is at *Buffalo, Erie County, N. Y.* (See p. 658.)

L. V. R. R.—Is at *Buffalo, Erie County, N. Y.*, and is a bench mark of the Lehigh Valley Railroad, on the northwest corner of the bridge over Ohio Slip, in the top of the foundation stone, and is an iron bolt.

Switch Tower.—Is at *Buffalo, Erie County, N. Y.*, northwest of the New York Central switch tower, 24 feet from the old stone milepost, 10 feet west of the track, and is the top of rail driven vertically in the ground.

Bridge.—Is at *Buffalo, Erie County, N. Y.*, at the southeast corner of the three-span iron truss bridge, at the overhead crossing of the Delaware, Lackawanna and Western Railroad, on the south corner of the fourteenth step from top of the wing wall, about level with the track, and is a chiseled square.

R. R. B. M.—Is at *Buffalo, Erie County, N. Y.*, on the northwest corner of the two-span steel truss bridge, No. 267, over Buffalo River, on the southwest corner of the parapet wall, and is a chiseled circle.

Bridge.—Is 0.58 mile north of *West Seneca, Erie County, N. Y.*, at the end of trestle and two-span bridge of the overhead crossing, at the north end of stone pier, about 4 feet above the main track, on the coping stone, and is a chiseled square.

N. Y. C. R. R.—Is 1.04 miles south of *West Seneca, Erie County, N. Y.*, 20 feet south of the survey station 606-50, 400 feet south of switch tower, and is the top of a rail driven vertically in the ground.

Culvert.—Is 0.56 mile south of *Blasdell, Erie County, N. Y.*, on the stone arch culvert over Rush Creek, at the north end of the west coping wall, and is a chiseled square.

Milepost 11.—Is 0.76 mile south of *Athol Springs, Erie County, N. Y.*, on milepost "B 11," on the north face, 6 feet above ground, and is a chiseled cross.

631 R.—Is 0.91 mile south of *Athol Springs, Erie County, N. Y.*, at the southeast corner of a stone culvert bridge, in the south face of the coping stone, and is a bronze tablet marked 631 Rochester 1902.

Culvert.—Is 1.99 miles north of *Lake View, Erie County, N. Y.*, at the west end of a box culvert, in the northeast corner of the coping stone, and is a chiseled square.

724 R.—Is 1.29 miles north of *Derby, Erie County, N. Y.*, 200 feet east of the Lake Shore and Michigan Southern track, at the southeast corner of highway bridge crossing the Pennsylvania Railroad, in the west face of the concrete wing wall, 2 feet above the ground, and is a bronze tablet marked 724 Rochester 1902.

Trestle 236.—Is 1.27 miles south of *Derby, Erie County, N. Y.*, on the southwest corner of trestle No. 236, near the northwest corner of the coping stone, and is a chiseled square.

Trestle.—Is 1.69 miles north of *Angola, Erie County, N. Y.*, at the northeast corner of the trestle over the cattle pass, 1 foot above the track, on the coping stone of the wing wall, and is a chiseled square.

Bridge 228.—Is 0.51 mile north of *Angola, Erie County, N. Y.*, on the southwest corner of the truss and stone arch bridge No. 228, near the northwest corner of the coping, and is a chiseled square.

633 R.—Is at *Farnham, Erie County, N. Y.*, on the southeast corner of bridge No. 220, in the east face of the parapet coping stone, and is a bronzed tablet marked 633 Rochester 1902.

Culvert 218.—Is 1.21 miles south of *Farnham, Erie County, N. Y.*, at the northeast corner of culvert 218, on the coping stone, and is a chiseled square.

Bridge 216.—Is 0.73 mile south of *Irving, Erie County, N. Y.*, on the southeast corner of bridge 216, near the northeast corner of the parapet wall, and is a chiseled square.

Bridge.—Is 0.45 mile north of *Silver Creek, Chautauqua County, N. Y.*, on the southwest corner of the stone arch bridge over the street, and on the southwest corner of the coping stone, and is a chiseled square.

Bridge 207.—Is at *Silver Creek, Chautauqua County, N. Y.*, on the southeast corner of bridge No. 207 over Dunkirk street, near the east corner of the parapet wall, and is a chiseled square.

Bridge 204.—Is 1.58 miles south of *Silver Creek, Chautauqua County, N. Y.*, on the southeast corner of bridge No. 204 (A 52), near the southeast corner of the parapet stone, and is a chiseled square.

Bridge.—Is 0.45 mile north of *Waites Crossing, Chautauqua County, N. Y.*, on the south pier of the foundation underbent of the overhead highway bridge crossing, on the west side of the track, on the southwest corner.

Bridge 195.—Is 0.70 mile south of *Waites Crossing, Chautauqua County, N. Y.*, on the southeast corner of the cattle pass bridge No. 195, at the east corner of the parapet stone, and is a chiseled square.

Culvert 187.—Is 1.20 miles northeast of *Dunkirk, Chautauqua County, N. Y.*, on the south end of culvert No. 187, on the northeast end of the coping stone, and is a chiseled square.

598 D.—Is at *Dunkirk, Chautauqua County, N. Y.* (See p. 859, App. 8, Report for 1899.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN LEBOEUF AND IRVINGTON,
PA., 1902.

(From information furnished by U. S. Geological Survey.)

1193 P.—Is 1.5 miles west of *Leboeuf, Erie County, Pa.* (See p. 864, App. 8, Report for 1899.)

Bridge.—Is 1 mile southwest of *Leboeuf, Erie County, Pa.*, near the Erie Railroad crossing, on the large highway bridge, on the southwest corner, on the foundation coping stone, and is a chiseled square.

Milepost 74.—Is 1.69 miles west of *Union City, Erie County, Pa.*, on the Erie Railroad, on the top of the stone milepost No. 74, and is a chiseled square.

Milepost 73.—Is 0.64 mile west of *Union City, Erie County, Pa.*, on the Erie Railroad, on top of the stone milepost No. 73, and is a chiseled square.

Milepost 72.—Is 0.31 mile east of *Union City, Erie County, Pa.*, on the top of stone milepost No. 72, and is a chiseled square.

Bridge 27.—Is 0.78 mile east of the Pennsylvania Railroad station at *Union City, Erie County, Pa.*, on bridge No. 27, on the northeast corner, on the parapet wall, and is a chiseled square.

Bridge 29.—Is 1.97 miles east of *Union City, Erie County, Pa.*, on the northeast corner of bridge No. 29, on the foundation stone, and is a chiseled square.

P. R. R. 72.—Is 2.22 miles east of *Union City, Erie County, Pa.*, on the east corner of bridge No. 30, on the foundation wall, and is a copper plug.

P. R. R. 71.—Is 1.09 miles west of *Elgin, Erie County, Pa.*, on the northwest corner of bridge No. 32, on the parapet stone, and is a chiseled square.

P. R. R. 70.—Is 0.13 mile west of *Elgin, Erie County, Pa.*, on the northeast corner of bridge No. 33, on the foundation stone, and is a copper plug.

1382 P.—Is 330 feet west of the station at *Elgin, Erie County, Pa.*, north of the track, on the store of D. S. Lyon, at the southeast corner, on the foundation wall (See note 48, p. 584.)

P. R. R. 69.—Is 0.84 mile west of *Lovell, Erie County, Pa.*, on the northeast corner of bridge No. 34, on the foundation wall, and is a copper bolt.

P. R. R. 68.—Is 0.16 mile east of *Lovell, Erie County, Pa.*, on the southwest corner of bridge No. 37, on the foundation stone, and is a copper plug.

P. R. R. 67.—Is 2.68 miles west of *Corry, Erie County, Pa.*, at the southeast corner of bridge No. 38, on the foundation stone, and is a copper plug.

P. R. R. 66.—Is 1.13 miles west of *Corry, Erie County, Pa.*, on the northwest corner of bridge No. 40, on bottom coping stone of wing wall, and is a copper plug.

1432 P.—Is 0.05 mile southwest of the station at *Corry, Erie County, Pa.*, on the northeast corner of the Phoenix Hotel, on the base of the water table. (See note 48, p. 584.)

P. R. R. 64.—Is 0.34 mile west of *Colza, Erie County, Pa.*, on the southeast corner of bridge No. 41, on the foundation wall, and is a copper plug.

P. R. R. 62.—Is 0.24 mile east of *Roach, Warren County, Pa.*, on the southwest corner of bridge 42 (large steel through truss bridge), on the parapet wall, and is a chiseled square.

1406 P.—Is at *Spring Creek, Warren County, Pa.*, 100 feet northeast of the station, on the southwest corner of Donaldson Bros.' general store, in the water table. (See note 48, p. 584.)

P. R. R. 58.—Is 0.26 mile east of *Spring Creek, Warren County, Pa.*, on the south side of the track, on the coping stone at the culvert, and is a chiseled square.

P. R. R. 57.—Is 0.70 mile east of *Spring Creek, Warren County, Pa.*, on the west side of an open culvert on the north side of the track, on the foundation stone, and is a copper plug.

P. R. R. 56.—Is 2.09 miles north of *Spring Creek, Warren County, Pa.*, on the northeast corner of girder bridge No. 42½, on the wing wall, and is a copper plug.

P. R. R. 55.—Is 0.17 mile west of *Horn, Warren County, Pa.*, on the southwest corner of a small girder bridge, on the foundation stone, and is a copper plug.

P. R. R. 54.—Is 1.18 miles east of *Horn, Warren County, Pa.*, on the south end of a box culvert, on the coping stone, and is a copper plug.

P. R. R. 51.—Is 1.12 miles east of *Garland, Warren County, Pa.*, on the southwest corner of "Blue Eye" Bridge over Blue Eye Creek, on the foundation coping stone, and is a copper plug.

P. R. R. 50.—Is 1.83 miles west of *Pittsfield, Warren County, Pa.*, on the southwest corner of railroad bridge, on the top of the foundation wall, and is a copper plug.

1244 P.—Is 0.52 mile west of *Pittsfield, Warren County, Pa.*, on the southeast corner of the large steel through truss bridge over creek on the foundation stone. (See note 48, p. 584, except tablet is bronze.)

P. R. R. 47.—Is 0.13 mile east of *Pittsfield, Warren County, Pa.*, on the northwest corner of bridge No. 46, on the foundation wall, and is a chiseled square.

P. R. R. 46.—Is 0.75 mile east of *Pittsfield, Warren County, Pa.*, on the southwest corner of a small bridge, on the foundation wing wall, and is a copper plug.

P. R. R. 45.—Is 0.86 mile west of *Youngsville, Warren County, Pa.*, on the southwest corner of bridge No. 47, on the foundation wall, and is a copper plug.

P. R. R. 48.—Is 0.32 mile west of *Youngsville, Warren County, Pa.*, on the southwest corner of the six-span girder bridge over Brokenstraw Creek, and is a copper plug.

P. R. R. 43.—Is 0.15 mile west of *Youngsville, Warren County, Pa.*, on the northeast corner of the Dunkirk, Allegheny Valley and Pittsburgh Railroad bridge, on projection of bottom foundation stone pier, and is a chiseled square.

P. R. R. 42.—Is 0.70 mile west of *Irvineton, Warren County, Pa.*, on the southwest corner of bridge No. 49, on the foundation wall, and is a chiseled square.

1167 D.—Is near *Irvineton, Warren County, Pa.* (See p. 740.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN MOREHEAD CITY, N. C., AND
BRUNSWICK, GA.

(U. S. Geol. Survey Reports, 1896-7, Part I, pp. 295-301; 1897-8, Part I, pp. 247-251; 1898-9, Part I, pp. 381-383.)

7 M. C.—Is at *Morehead City, Carteret County, N. C.*, 8.3 feet east of the depot, 5.6 feet north of the north rail of the Atlantic and North Carolina Railroad, 96.9 feet west of said railroad company's bulkhead of wharf. (See note 23, p. 582.)

17 M. C.—Is at *Morehead City, Carteret County, N. C.*, at the northwest corner of Eighth and Arendal streets; at the southeast corner of a brick house owned by George Dees. (See note 24, p. 582.)

18 M. C.—Is 1.92 miles west of *Atlantic, Carteret County, N. C.*, 23 feet south of the north rail at the southwest corner of M. D. Oglesby's freight platform. (See note 23, p. 582.)

28 M. C.—Is 2.31 miles west of *Newport, Carteret County, N. C.*, 25 feet south of the north rail, in line with the telegraph poles. (See note 23, p. 582.)

26 M. C.—Is 1.74 miles west of *Havelock, Craven County, N. C.*, 26 feet south of the north rail, in line with the telegraph poles. (See note 23, p. 582.)

25 M. C.—Is at *Riverdale, Craven County, N. C.*, 5 feet north of north rail at mail catcher. (See note 23, p. 582.)

7 M. C.—Is about 1 mile south of *Newbern, Craven County, N. C.*, 2 feet from the north end of the west abutment of Scott Creek trestle. (See note 24, p. 582.)

16 M. C.—Is at *Newbern, Craven County, N. C.*, at the northwest corner of Broad and Craven streets, in the corner stone at the northeast corner of the county courthouse. (See note 24, p. 582.)

27 M. C.—Is about 3 miles east of *Clark, Craven County, N. C.*, 0.73 mile west of milepost G 54 M 41, 30 feet south of the north rail, in line with the telegraph poles. (See note 23, p. 582.)

51 M. C.—Is 1.14 miles west of *Tuscarora, Craven County, N. C.*, 30 feet south of the north rail, in line with the telegraph poles. (See note 23, p. 582.)

48 M. C.—Is at *Cove Creek, Craven County, N. C.*, 75 feet south of the north rail, 4 feet northeast of the northeast corner of L. F. Taylor's store, on the west side of the Trenton road. (See note 23, p. 582.)

64 M. C.—Is at *Dover, Craven County, N. C.*, 19 feet east of the main crossroad and 77 feet south of the north rail. (See note 23, p. 582.)

48 M. C.—Is at *Kinston, Lenoir County, N. C.*, on the county court-house, on the north face of the northwest corner of the portico on the west end of the building. (See note 24, p. 582.)

55 M. C.—Is at *Falling Creek, Lenoir County, N. C.*, 31 feet south of the north rail of the main track, on the west side of the road. (See note 23, p. 582.)

109 M. C.—Is at *Lagrange, Lenoir County, N. C.*, 31 feet south of the north rail of the main track, at the southeast corner of the ticket office. (See note 23, p. 582.)

120 M. C.—Is 4.18 miles west of *Bests, Wayne County, N. C.*, 30 feet west of the country road and 30 feet south of the north rail, in line with the telegraph poles. (See note 23, p. 582.)

111 M. C.—Is at *Goldsboro, Wayne County, N. C.*, on the county court-house, at the northwest corner. (See note 24, p. 582.)

136 M. C.—Is at *Rose, Wayne County, N. C.*, in line with the telegraph poles (See note 23, p. 582.)

152 M. C.—Is at *Princeton, Johnston County, N. C.*, 23.2 feet north of the north rail of the main track, at the east side of the platform. (See note 23, p. 582.)

178 M. C.—Is at *Selma, Johnston County, N. C.*, 158 feet south of the north rail of the main track of the Southern Railway, 128 feet west of the west building line of Webb street, near the east end of a one-story brick store occupied by N. B. Snipe & Bro. (See note 24, p. 582.)

229 M. C.—Is at *Wilsons Mills, Johnston County, N. C.*, in the coping over the west edge of the opening at the north end of a 3 by 3 foot box culvert. (See note 25, p. 582.)

346 M. C.—Is at *Clayton, Johnson County, N. C.*, 162 feet south of the north rail of the main track, on the front of the brick store of W. H. McCullers, sr., & Son, near the east corner. (See note 24, p. 582.)

384 M. C.—Is at *Garner, Wake County, N. C.*, 25 feet north of the north rail of the main track and 12 feet west of the southwest corner of the ticket office. (See note 23, p. 582.)

363 M. C.—Is at *Raleigh, Wake County, N. C.*, on the corner stone of the State Capitol. (See note 24, p. 582.)

497 M. C.—Is at *Cary, Wake County, N. C.*, 22 feet south of the north rail of the main track and 3 feet east of the northeast corner of the station. (See note 23, p. 582.)

321 M. C.—Is 0.59 mile west of *Morrisville, Wake County, N. C.*, 33.6 feet south of the north rail and 26.8 feet east of a 6-inch hickory tree. (See note 23, p. 582.)

360 M. C.—Is 2.06 miles west of *Nelson, Durham County, N. C.*, in a stone over the north end of 3 by 3 foot box culvert. (See note 25, p. 582.)

406 M. C.—Is at *Durham, Durham County, N. C.*, on the county court-house, on the west side of the Main street entrance. (See note 24, p. 582.)

471 M. C.—Is at *University Station, Orange County, N. C.*, 1.5 feet north of the northwest corner of the station. (See note 23, p. 582.)

549 M. C.—Is 2.46 miles south of *Robson, Orange County, N. C.*, 23 feet east of the west rail, and 2 feet south of the signpost at the road crossing. (See note 23, p. 582.)

503 M. C.—Is at *Chapel Hill, Orange County, N. C.*, at the University of North Carolina, and consists of a stone tablet on the north side of Memorial Hall. (See note 24, p. 582.)

543 M. C.—Is at *Hillsboro, Orange County, N. C.*, at the northwest corner of the county court-house. (See note 24, p. 582.)

667 M. C.—Is 0.17 mile west of *Efland, Orange County, N. C.*, 32 feet north of the north rail, in line with the telegraph poles. (See note 23, p. 582.)

678 M. C.—Is at *Mebane, Alamance County, N. C.*, 28.4 feet south of the north rail of the main track, at the northeast corner of the station. (See note 23, p. 582.)

642 M. C.—Is at *Graham, Alamance County, N. C.*, on the county court-house, on the north front, 2 feet west of the main doorway. (See note 24, p. 582.)

721 M. C.—Is at *Gibsonville, Guilford County, N. C.*, 25.7 feet north of the rail of the main track, at the southeast corner of the ticket office. (See note 23, p. 582.)

744 M. C.—Is at *McLeansville, Guilford County, N. C.*, 95 feet south of the north rail of the main track, near the northwest corner of a small store. (See note 23, p. 582.)

839 M. C.—Is at *Greensboro, Guilford County, N. C.*, at the northeast corner of the Federal court-house and post-office. (See note 24, p. 582.)

813 M. C.—Is 1.5 miles south of *Pomona, Guilford County, N. C.*, 2 feet from the east end of the north back wall of bridge No. 290.7. (See note 25, p. 582.)

793 M. C.—Is at *Jamestown, Guilford County, N. C.*, 185 feet south of the depot in a large bowlder, 182 feet east of the west rail of the main track. (See note 25, p. 582.)

940 M. C.—Is at *High Point, Guilford County, N. C.*, on J. R. Flagg's drug store, at the east corner of brick front, 99 feet west of the west rail of the main track. (See note 24, p. 582.)

852 M. C.—Is at *Thomasville, Davidson County, N. C.*, 28 feet east of the west rail of the main track, at the southwest corner of the ticket office. (See note 23, p. 582.)

665 M. C.—Is 1.04 miles west of *Conrad, Davidson County, N. C.*, on the coping of the east end of the north back wall of the bridge over Rich Fork, No. 315.9. (See note 25, p. 582.)

811 M. C.—Is at *Lexington, Davidson County, N. C.*, at the southeast corner of the county court-house. (See note 24, p. 582.)

630 M. C.—Is 0.72 mile south of *Linwood, Davidson County, N. C.*, on the coping at the east end of the south abutment of bridge No. 326.4. (See note 25, p. 582.)

765 M. C.—Is at *Salisbury, Rowan County, N. C.*, at the southwest corner of the county court-house. (See note 24, p. 582.)

671 M. C.—Is 3.72 miles west of *Majolica, Rowan County, N. C.*, at Second Creek bridge, on the southeast corner of the southeast pedestal block. (See note 25, p. 582.)

790 M. C.—Is at *Cleveland, Rowan County, N. C.*, 20 feet north of the north rail of the main track, at the southwest corner of the station. (See note 23, p. 582.)

838 M. C.—Is at *Elmwood, Iredell County, N. C.*, 34.5 feet south of the north rail of the main track, at the northeast corner of the station. (See note 23, p. 582.)

926 M. C.—Is at *Statesville, Iredell County, N. C.*, on the southeast corner of the county court-house. (See note 24, p. 582.)

776 M. C.—Is 0.15 mile west of the station at *Plott, Iredell County, N. C.*, on the coping at the southeast end of the north abutment of the bridge. (See note 25, p. 582.)

873 M. C.—Is at *Catawba, Catawba County, N. C.*, on J. U. Long & Co.'s store, on the brickwork near the north corner of the east front, 437 feet south of the north rail of the main track. (See note 24, p. 582.)

970 M. C.—Is at *Claremont, Catawba County, N. C.*, 29.5 feet south of the north rail of the main track, at the northeast corner of the station. (See note 23, p. 582.)

996 M. C.—Is at *Newton, Catawba County, N. C.*, on the county court-house, at the west end of the north portico. (See note 24, p. 582.)

1164 M. C.—Is at *Hickory, Catawba County, N. C.*, 148.8 feet north of the north rail of the main track, at the northeast corner of the First National Bank building. (See note 24, p. 582.)

1087 M. C.—Is 0.91 mile west of *Hildebran, Burke County, N. C.*, 3 feet from the east end of the coping, at the north end of the culvert. (See note 25, p. 582.)

1193 M. C.—Is at *Connelly Springs, Burke County, N. C.*, 142.4 feet north of the north rail of the main track, on James Hudson's brick store, on the south front, near the east corner. (See note 24, p. 582.)

1193 M. C.—Is at *Drexel, Burke County, N. C.*, 15 feet north of the north rail of the main track, 0.14 mile east of milepost 74. (See note 23, p. 582.)

1182 M. C.—Is at *Morganton, Burke County, N. C.*, on the county court-house, on the extreme northwest corner of the north portico. (See note 24, p. 582.)

1215 M. C.—Is at *Glen Alpine, Burke County, N. C.*, 73.2 feet north of the north rail of the main track, at the southeast corner of the brick basement of Hennessee Co.'s store. (See note 24, p. 582.)

1091 M. C.—Is 0.4 mile east of *Bridgewater, Burke County, N. C.*, on the bridge seat at the west end of Muddy Creek bridge, 2.75 feet south of the south rail. (See note 25, p. 582.)

1298 M. C.—Is at *Nebo, McDowell County, N. C.*, 134.2 feet north of the north rail of the main track, on the south basement wall, 1 foot from the east front of J. D. Pitt's store. (See note 24, p. 582.)

1438 M. C.—Is at *Marion, McDowell County, N. C.*, on the county court-house, on the west face at the south end of the portico. (See note 24, p. 582.)

1286 M. C.—Is at *Greenlees, McDowell County, N. C.*, 11.7 feet south of the north rail of the main track, at the east end of the platform. (See note 23, p. 582.)

1437 M. C.—Is at *Old Fort, McDowell County, N. C.*, 40.7 feet north of the north rail of the main track, at the southwest corner of the ticket office. (See note 23, p. 582.)

1829 M. C.—Is at *Round Knob, McDowell County, N. C.*, 9 feet south of the north rail and 46.1 feet east of the entrance to Round Knob Hotel, in the face of a solid rock. (See note 24, p. 582.)

2153 M. C.—Is at *Mud Cut, McDowell County, N. C.*, 14.2 feet south of the north rail of the main track and 293 feet east of the switch point. (See note 23, p. 582.)

2522 M. C.—Is at *Swannanoa Tunnel, in McDowell County*, about 3 miles east of *Black Mountain, Buncombe County, N. C.*, on the north side wall of the tunnel, 2.6 feet east of the west portal. (See note 24, p. 582.)

2222 M. C.—Is at *Swannanoa, Buncombe County, N. C.*, 50.6 feet south of the north rail of the main track, on the west side of the ticket office. (See note 23, p. 582.)

2057 M. C.—Is at *Azalea, Buncombe County, N. C.*, in the face of the rock, 12.75 feet south of the north rail of the main track, 59.75 feet west of the switch point. (See note 24, p. 582.)

1996 M. C.—Is at *Biltmore, Buncombe County, N. C.*, at office of the Biltmore estate, set in the bottom stone of the northwest pillar of the porte-cochère. (See note 24, p. 582.)

1986 M. C.—Is at *Askville, Buncombe County, N. C.*, 19.3 feet north of the north rail, 505 feet east of milepost 141, on the pedestal block of the northeast corner post of the train shed. (See note 24, p. 582.)

1924 M. C.—Is 1.13 miles east of *Olivette, Buncombe County, N. C.*, 40.8 feet north of the north rail of the main track, 400 feet east of the water tank, in a boulder containing 50 cubic yards. (See note 25, p. 582.)

1796 M. C.—Is at *Alexander, Buncombe County, N. C.*, 310 feet west of the station, 11.1 feet south of the north rail of the main track, at the east side of the road crossing. (See note 25, p. 582.)

1729 M. C.—Is 0.97 mile west of *Bailey, Madison County, N. C.*, in the top of a solid rock 19 feet east of milepost 158, 11.5 feet south of the main track. (See note 25, p. 582.)

1646 M. C.—Is at *Marshall, Madison County, N. C.*, at the county court-house, on the southeast corner. (See note 24, p. 582.)

1529 M. C.—Is 0.19 mile west of *Barnard, Madison County, N. C.*, in the solid rock, 140 feet west of milepost 171, and 6.5 feet north of the north rail of the main track. (See note 25, p. 582.)

1326 M. C.—Is at *Hot Springs, Madison County, N. C.*, at the southeast corner of the east abutment of Spring Creek bridge. (See note 25, p. 582.)

1259 M. C.—Is at *Paint Rock, Madison County, N. C.*, at the north end of the west abutment of Grass Creek bridge. (See note 24, p. 582.)

1184 M. C.—Is 0.75 mile west of *Wolf Creek, Cocke County, Tenn.*, in the solid rock, 200 feet west of the road crossing, 10.5 feet south of the north rail. (See note 28, p. 583.)

1141 M. C.—Is at Big Creek bridge (No. S. 195.3), near *Delrio, Cocke County, Tenn.*, in the north wing wall of the west abutment, 12 feet north of the north rail. (See note 28, p. 583.)

1094 M. C.—Is at *Bridgeport, Cocke County, Tenn.*, 72.7 feet south of the north rail of the main track, in the center pilaster of J. B. Huff's brick store. (See note 27, p. 582.)

1058 M. C.—Is at *Newport, Cocke County, Tenn.*, on the county court-house, in the northeast corner of the building, 6.5 feet above the surface of the ground. (See note 27, p. 582.)

1010 M. C.—Is at *Rankin, Cocke County, Tenn.*, 125 feet south of the north rail of the main track, 95 feet west of the road crossing, in the face of the bay window of W. V. Fine's brick residence. (See note 27, p. 582.)

1142 M. C.—Is at *White Pine, Jefferson County, Tenn.*, 67 feet north of the north rail of the main track and 150 feet east of milepost 219, on the southwest corner of the brick dwelling occupied by George Ivy. (See note 27, p. 582.)

1351 M. C.—Is at *Morristown, Hamblen County, Tenn.*, in the northeast corner of the county court-house. (See note 27, p. 582.)

1193 M. C.—Is at *Talbot, Jefferson County, Tenn.*, 4.9 feet west of the west end of the depot, 30 feet north of the north rail of the main track. (See note 26, p. 582.)

1118 M. C.—Is at *Mossy Creek, Jefferson County, Tenn.*, 90 feet east of the station, 116 feet south of the north rail of the main track, in the northeast corner of the Mossy Creek Bank building. (See note 27, p. 582.)

905 M. C.—Is 0.63 mile east of *Hodges, Jefferson County, Tenn.*, in the southeast corner of the east abutment of culvert (No. A 110.4), 13.5 feet south of the north rail of the track. (See note 28, p. 583.)

865 M. C.—Is near *Mascot, Knox County, Tenn.*, in the abutment of Flat Creek bridge (No. A 117.7), 9 feet south of the north rail. (See note 28, p. 583.)

867 M. C.—Is 0.45 mile east of *Caswell, Knox County, Tenn.*, on culvert (No. A 124.0), at the south corner of the west abutment, 12 feet south of the north rail. (See note 28, p. 583.)

933 M. C.—Is at *Knoxville, Knox County, Tenn.*, in the northeast corner of the Clinch street entrance to the custom-house. (See note 27, p. 582.)

940 M. C.—Is 0.91 mile east of *Wright, Knox County, Tenn.*, on culvert (No. A 138.9), in the east wall, 11.3 feet south of the north rail. In 1900 it was found that this culvert was marked 138.1. (See note 28, p. 583.)

820 M. C.—Is at *Concord, Knox County, Tenn.*, in the north front of the depot, 24.6 feet west of the east end, and 28.2 feet south of the north rail of the main track. (See note 27, p. 582.)

799 M. C.—Is at *Lenoir City, Loudon County, Tenn.*, 291.6 feet north of the north rail of the main track, 154 feet east of the depot, in the southeast corner of the Lenoir City Bank. (See note 27, p. 582.)

784 M. C.—Is at *Loudon, Loudon County, Tenn.*, at the county court-house, in the southwest corner of the Grove street entrance. (See note 27, p. 582.)

860 M. C.—Is at *Philadelphia, Loudon County, Tenn.*, 31.6 feet north of the north rail of the main track, 2 feet east of the depot. (See note 26, p. 582.)

918 M. C.—Is at *Sweetwater, Monroe County, Tenn.*, 198 feet north of the north rail of the main track, in the east front of the Sweetwater Bank. (See note 27, p. 582.)

979 M. C.—Is at *Mouse Creek, McMinn County, Tenn.*, 33.6 feet north of the north rail of the main track, in the west face of the station, 3.1 feet north of the south front. (See note 27, p. 582.)

869 M. C.—Is at *Athens, McMinn County, Tenn.*, at the county court-house, in the northwest corner of Jackson street entrance. (See note 27, p. 582.)

807 M. C.—Is at *Riceville, McMinn County, Tenn.*, 18.2 feet south of the north rail of the main track, in the north front of the depot, 2.2 feet from the east corner. (See note 27, p. 582.)

706 M. C.—Is near *Charleston, Bradley County, Tenn.*, on bridge over Hawassee River (No. A 200.5 three spans, 391 feet long), in the south end of the west back wall. (See note 27, p. 582.)

798 M. C.—Is 0.2 mile west of *Tasso, Bradley County, Tenn.*, in the south end of the west wall of culvert (No. A 206.9), 9.4 feet south of the north rail of the main track. (See note 28, p. 583.)

875 M. C.—Is at *Cleveland, Bradley County, Tenn.*, at the county court-house, in the water table on the north side of Ocoee street entrance. (See note 27, p. 582.)

895 M. C.—Is at *Blue Springs, Bradley County, Tenn.*, 146.7 feet east of the west rail of the main track, 73.3 feet north of the north switch point, in the face of a ledge of rock. (See note 27, p. 582.)

866 M. C.—Is at *Cohutta, Whitfield County, Ga.*, 157 feet east of the west rail of the main track; in the north front of W. A. Williams's brick store. (See note 27, p. 582.)

795 M. C.—Is at *Waring, Whitfield County, Ga.*, 24 feet west of the west rail of the main track and 6.6 feet north of milepost No. H 35. (See note 26, p. 582.)

774 M. C.—Is at *Dalton, Whitfield County, Ga.*, at the county court-house; in the water table on the north side of the Cleveland street entrance. (See note 27, p. 582.)

712 M. C.—Is at *Phelps, Whitfield County, Ga.*, 50 feet west of the west rail, opposite the switch point, at the south end of the side track and near the southeast corner of the post-office. (See note 26, p. 582.)

719 M. C.—Is at *Miller, Gordon County, Ga.*, 76.4 feet west of the west rail of the main track, at the northeast corner of L. C. Rooker's store. (See note 26, p. 582.)

620 M. C.—Is near *Oostanaula, Gordon County, Ga.*, on the west pedestal block of the south abutment of bridge (No. H 61.3) over Oostanaula River, 7.6 feet west of the west rail. (See note 28, p. 583.)

653 M. C.—Is at *Pinson, Floyd County, Ga.*, 23.3 feet east of the west rail and 15.3 feet north of the switch point. (See note 26, p. 582.)

614 M. C.—Is at *Rome, Floyd County, Ga.*, at the city post-office, and is an aluminum tablet, set in the face of the steps to the Fourth avenue entrance, marked 614 M. C.

697 M. C.—Is 0.08 mile south of *Chambers, Floyd County, Ga.*, in the north abutment of trestle No. H 86.3, 7 feet west of the west rail. (See note 28, p. 583.)

799 M. C.—Is in *Polk County, Ga.*, 0.45 mile south of *Seney, Ga.*, on a 6-foot arch culvert, in the west face wall, 6.3 feet south of the center of the arch. (See note 28, p. 583.)

774 M. C.—Is 0.13 mile north of *Rockmart, Polk County, Ga.*, on the Euharlee Creek bridge, in the south abutment, 5.7 feet west of the west rail. (See note 28, p. 583.)

1088 M. C.—Is 0.54 mile south of *Braswell, Paulding County, Ga.*, in the west wall of the tunnel, 3 feet from the north portal. (See note 27, p. 582.)

1015 M. C.—Is at *McPherson, Paulding County, Ga.*, 79.8 feet west of the west rail of the main track, 30 feet south of the road crossing, and is a United States Geological Survey iron bench-mark post, set 2 feet from the northeast corner of J. E. Butler's house, marked 1015 M. C.

1050 M. C.—Is at *Dallas, Paulding County, Ga.*, at the county court-house, at the west side of the south entrance. (See note 27, p. 582.)

957 M. C.—Is 2.22 miles north of *Powder Springs, Cobb County, Ga.*, and 0.31 mile north of milepost 128, in the rock formation on the west side of the cut. (See note 28, p. 583.)

930 M. C.—Is at *Austell, Cobb County, Ga.*, at W. E. Shelerton's Hotel, in the north front of the building, 6.7 feet from the west corner. (See note 27, p. 582.)

804 M. C.—Is 0.42 mile west of *Lenox, Cobb County, Ga.*, 70 feet west of milepost, in the solid rock, 142.8 feet south of the south rail of the main track. (See note 28, p. 583.)

855 M. C.—Is at *Peyton, Fulton County, Ga.*, 16 feet south of the south rail of the main track and 12 feet west of the west side of the station. (See note 26, p. 582.)

1050 M. C.—Is at *Atlanta, Fulton County, Ga.*, on the State capitol; and is an aluminum tablet in the north newel post of the Washington street entrance, marked 1050 M. C.

847 M. C.—Is at *Constitution, Dekalb County, Ga.*, 4 feet southeast of the station signpost, and 25 feet south of the railroad. (See note 30, p. 583.)

848 M. C.—Is at *Ellenwood, Clayton County, Ga.*, 2 feet northwest of the station platform, and 20 feet south of the track. (See note 30, p. 583.)

810 M. C.—Is at *Stockbridge, Henry County, Ga.*, on the brick post-office building, 18 feet to the left of the front doorway, 2½ feet above ground, and is an aluminum tablet marked 810 MOREHEAD, 1898.

866 M. C.—Is at *McDonough, Henry County, Ga.*, on the county court-house, on the granite footstone of the stone arch at the right of the main entrance, and is an aluminum tablet marked 866 MOREHEAD, 1898.

837 M. C.—Is at *Locust Grove, Henry County, Ga.*, 55 feet north of the railroad station, 25 feet west of the main track, 3 feet north of a small black-oak tree 4 inches in diameter. (See note 30, p. 583.)

766 M. C.—Is at *Jenkinsburg, Butts County, Ga.*, 25 feet west of the Southern Railway station, 20 feet south of the track. (See note 30, p. 583.)

727 M. C.—Is at *Jackson, Butts County, Ga.*, on the county court-house, in the sandstone just above the water table at the right of the front entrance, and is an aluminum tablet marked 727 MOREHEAD, 1898.

546 M. C.—Is at *Cork, Butts County, Ga.*, 10 feet south of the station platform. (See note 30, p. 583.)

375 M. C.—Is at *Juliette, Monroe County, Ga.*, 88 feet south of railroad station, 15 feet west of the center of the track, 3 feet south of milepost 217. (See note 30, p. 583.)

347 M. C.—Is at *Dames Ferry, Monroe County, Ga.*, 3 feet north of the station, 23 feet west of the center of the main track. (See note 30, p. 583.)

339 M. C.—Is at *Holton, Bibb County, Ga.*, 35 feet north of the station, 29 feet west of the center of the track. (See note 30, p. 583.)

334 M. C.—Is at *Macon, Bibb County, Ga.*, on the United States post-office building at the corner of Mulberry and Third streets, in water table at the left of the Mulberry street entrance, and is an aluminum tablet marked 334 MOREHEAD, 1898.

272 M. C.—Is at *Reid, Twiggs County, Ga.*, opposite the signboard, 40 feet southwest of the center of the main track. (See note 30, p. 583.)

259 M. C.—Is at *Bullard, Twiggs County, Ga.*, 2 feet south of the south end of the platform and 35 feet east of the center of the main track. (See note 30, p. 583.)

259 M. C.—Is at *Adams Park, Twiggs County, Ga.*, 3½ feet south of the platform, 19 feet east of the center of the main track. (See note 30, p. 583.)

234 M. C.—Is at *Westlake, Twiggs County, Ga.*, 2½ feet south of the station platform, 33 feet east of the center of the main track. (See note 30, p. 583.)

259 M. C.—Is at *McGriff, Pulaski County, Ga.*, $4\frac{1}{2}$ feet south of the pump house, $12\frac{1}{2}$ feet west of the center of the track. (See note 30, p. 583.)

342 M. C.—Is at *Cochran, Pulaski County, Ga.*, 55 feet west of the station platform, 33 feet west of the center of the main track, 3 feet north of a large telegraph pole. (See note 30, p. 583.)

381 M. C.—Is at *Empire, Dodge County, Ga.*, 50 feet north of the station platform, 13 feet west of the center of the main track, 4 feet south of a post marked STOP. (See note 30, p. 583.)

400 M. C.—Is at *Gresston, Dodge County, Ga.*, 36 feet west of the southwest corner of the station, 17 feet west of the center of the track. (See note 30, p. 583.)

357 M. C.—Is at *Eastman, Dodge County, Ga.*, 37 feet north of the station, 38 feet west of the center of the track. (See note 30, p. 583.)

312 M. C.—Is at *Godwinsville, Dodge County, Ga.*, 15 feet north of the station, $20\frac{1}{2}$ feet west of the center of the main track. (See note 30, p. 583.)

300 M. C.—Is at *Chauncey, Dodge County, Ga.*, 2 feet east of the station platform, 47 feet north of the center of the main track. (See note 30, p. 583.)

275 M. C.—Is at *Achord, Dodge County, Ga.*, opposite the signboard near the west end of the siding, 100 feet south of the southwest corner of a store, 28 feet south of the center of the main track. (See note 30, p. 583.)

229 M. C.—Is at *McRae, Telfair County, Ga.*, at the Southern Railway station, 8 feet east of the platform, 1 foot east of telegraph pole, and 32 feet south of the center of the main track. (See note 30, p. 583.)

142 M. C.—Is at *Scotland, Telfair County, Ga.*, at the Southern Railway station, 8 inches east of the east edge of the platform, 35 feet south of the center of the main track. (See note 30, p. 583.)

128 M. C.—Is at *Towns, Telfair County, Ga.*, at the Southern Railway station, 39 feet south of the center of the platform, 34 feet south of the center of the main track. (See note 30, p. 583.)

146 M. C.—Is at *Lumber City, Telfair County, Ga.*, 200 feet east of the Southern Railway station, 52 feet north of the center of the main track, 26 feet southwest of the corner of a barber shop, and $3\frac{1}{2}$ feet west of a chinaberry tree. (See note 30, p. 583.)

256 M. C.—Is at *Hazlehurst, Appling County, Ga.*, at the Southern Railway station, 2 feet east of the platform, $30\frac{1}{2}$ feet south of the center of the main track. (See note 30, p. 583.)

244 M. C.—Is at *Graham, Appling County, Ga.*, $9\frac{1}{2}$ feet west of the Southern Railway station, 26 feet south of the center of the main track, $2\frac{1}{2}$ feet north of telegraph pole. (See note 30, p. 583.)

229 M. C.—Is at *Pine Grove, Appling County, Ga.*, at the Southern Railway station, 39 feet east of the road crossing, 47 feet east of the freight platform, 16 feet south of the center of the main track, between two posts holding the sign "Pine Grove." (See note 30, p. 583.)

206 M. C.—Is at *Baxley, Appling County, Ga.*, 67 feet east of the end of the Southern Railway station, 37 feet south of the center of the main track, 4 feet west of a telegraph pole. (See note 30, p. 583.)

200 M. C.—Is at *Wheaton, Appling County, Ga.*, at the Southern Railway station, 57 feet northeast of the northeast corner of the freight platform, 44 feet south of the corner of a shanty, 33 feet north of the center of the main track. (See note 30, p. 583.)

187 M. C.—Is at *Surrency, Appling County, Ga.*, at the Southern Railway station, 45 feet south of the platform, 37 feet south of the center of the main track. (See note 30, p. 583.)

167 M. C.—Is at *Brentwood, Wayne County, Ga.*, at the Southern Railway station, 54 feet east of the freight building and platform, 36 feet north of the center of the main track, 45 feet south of the store. (See note 30, p. 583.)

155 M. C.—Is at *Odum, Wayne County, Ga.*, at the Southern Railway station, 78 feet west of the platform, $25\frac{1}{2}$ feet south of the center of the main track, $43\frac{1}{2}$ feet north of the porch of L. Carter & Bro.'s warehouse. (See note 30, p. 583.)

99 M. C.—Is at *Jesup, Wayne County, Ga.*, $2\frac{1}{2}$ feet southwest of the Southern Railway station (also Savannah, Florida and Western Railway station), 33 feet northwest of the center of the main track of the Savannah, Florida and Western Railway. (See note 30, p. 583.)

61 M. C.—Is at *Gardi, Wayne County, Ga.*, $2\frac{1}{2}$ feet from the southeast corner of the Southern Railway station, 39 feet northeast of the center of the main track. (See note 30, p. 583.)

85 M. C.—Is at *Pendarvis, Wayne County, Ga.*, between the posts holding the signboard, 850 feet south of the head block at the north end of the siding, 22 feet northeast of the center of the main track, 174 feet south of the corner of the dwelling house. (See note 30, p. 583.)

55 M. C.—Is at *Mount Pleasant, Wayne County, Ga.*, 95 feet northwest of the Southern Railway station, 42 feet southwest of the center of the main track. (See note 30, p. 583.)

16 M. C.—Is at *Everett, Glynn County, Ga.*, 29 feet west of the Southern Railway station, $11\frac{1}{2}$ feet west of the center of the main track, $109\frac{1}{2}$ feet northwest of the center of the crossing of the Southern Railway and Florida Central and Peninsular Railroad, $2\frac{1}{2}$ feet northwest of the telegraph pole. (See note 30, p. 583.)

18 M. C.—Is at *Sapp Still* (Pennick post-office), *Glynn County, Ga.*, 160 feet north of the head block at the south end of the siding, 24 feet east of the center of the main track, between the posts supporting the signboard. (See note 30, p. 583.)

24 M. C.—Is 2 miles north of *Dock Junction, Glynn County, Ga.*, at the crossing of the Southern Railway and the Brunswick and Western Railroad, 22 feet northeast of the center of the Brunswick and Western track, and $23\frac{1}{2}$ feet east of the center of the Southern track. (See note 30, p. 583.)

10 M. C.—Is at *Brunswick, Glynn County, Ga.*, on the city hall building, at the southwest corner of the intersection of Newcastle and Mansfield streets, in the foundation wall at the right of the Newcastle-street entrance, and is an aluminum tablet marked 10 MOREHEAD, 1899.

U. S. E. 1.—Is at *Brunswick, Glynn County, Ga.*, in Glauber & Isaacs's warehouse, near McCullough's wharf, and is a large spike in an oak stump under a hole made through the floor.

U. S. E. 2.—Is at *Brunswick, Glynn County, Ga.*, 80 feet south of Glauber & Isaacs's warehouse, 12 feet west of the office building, on a spike in a notch in the south-west side of a live-oak tree 20 inches in diameter.

U. S. E. 3.—Is at *Brunswick, Glynn County, Ga.*, on McCullough's wharf, 20 feet back from and 16 feet from the south edge of ballast pile, and is the top of the coupling of a 1½-inch gas pipe driven in the ground, now about 15 inches above the surface.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN CLEVELAND AND CHATTANOOGA, TENN., 1902.

[From information furnished by U. S. Geological Survey.]

875 M. C.—Is at *Cleveland, Bradley County, Tenn.* (See p. 756.)

789 N.—Is 0.3 mile west of the crossing at *Black Fox, Bradley County, Tenn.*, on the north end of the culvert over Black Fox Creek, 4 feet from the west end of the cap stone and 5 feet from the edge of the same, and is a bronze tablet marked 789 NASHVILLE 1899.

854 N.—Is 0.16 mile northeast of *Hinches Switch, James County, Tenn.*, at the road crossing, 18 feet west of the center of the track, 15 feet north of the road, in the east face of a ledge of rock, and is a bronze tablet marked 854 NASHVILLE 1899.

Ledge of rock.—Is 300 feet west of the station at *Ooltewah Junction, James County, Tenn.*, 150 feet east of the switch, 18 feet south of the center of the Atlanta track, 20 feet west of the water tank on top of a ledge of rock, and is a chiseled square.

716 N.—Is 900 feet southwest of the station at *Tyners, Hamilton County, Tenn.*, 80 feet southwest of the highway, at the east end of the culvert under the tracks, 3.4 feet from the north end, in the face of the capstone, and is a bronze tablet marked 716 NASHVILLE 1899.

Bridge.—Is 0.33 mile northeast of *McCarty, Hamilton County, Tenn.*, on bridge No. 235.4 over Chickamauga creek, at the east end of the girder bridge, and the west end of the truss bridge, at the southeast corner of the pier, and is a chiseled square.

Bridge.—Is at *McCarty, Hamilton County, Tenn.*, on the southeast corner of the stone arch railroad bridge of the Southern Railway over the Western and Atlantic Railroad, on the edge of the fifth course of stone, and is a chiseled cross.

688 N.—Is 600 feet northwest of the station at *Boyce, Hamilton County, Tenn.*, at the main entrance to the Sherman House, at the east end of the stone door sill, in the upper surface, and is a bronze tablet marked 688 NASHVILLE 1899.

698 N.—Is at *Chattanooga, Hamilton County, Tenn.*, on the United States Government building (post-office), 3 feet north of the southeast corner of the building, in the lower course of stones, and is a bronze tablet marked 698 NASHVILLE 1899.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN CLEVELAND AND CANTON, OHIO, 1902.

[From information furnished by U. S. Geological Survey.]

U. S. E. 1.—*Cleveland, Ohio.* A mark (B×M) on the top of the northeast wall of the Ohio Canal lock, at the connection of the canal with the river.

U. S. E. 2.—Is at *Cleveland, Cuyahoga County, Ohio*, on the south corner of Front and River streets, on the north corner of the Johnson House Block, on the corner stone of the water table, and is a chiseled cross.

U. S. E. 3.—*Cleveland, Ohio.* A cross (X) on the stone water table, southwest corner of brick block, northeast corner of River and Superior streets.

Gauge.—Is at *Cleveland, Cuyahoga County, Ohio* (United States Engineer water gauge), zero mark, which equals mean elevation of Lake Erie for the years 1860 to 1875, inclusive.

Bridge.—Is at *Cleveland, Cuyahoga County, Ohio*, on the east corner of Independence street and East Clark avenue, at the north corner of the railroad bridge over the canal and the street, on the fourth step of the wing wall above the avenue, and is a chiseled square.

Bridge 15.—Is at *Cleveland, Cuyahoga County, Ohio*, on Miles avenue, 0.84 mile south of the station, on the northwest corner of girder bridge No. 15 over A., B. and C. Electric Railway, on the coping stone of the foundation, and is a chiseled square.

R. R. B. M.—Is 2.16 miles northwest of *Bedford, Cuyahoga County, Ohio*, on the west side of the track, on the second step of the south wall of the drain, and is a chiseled cross.

Town Hall.—Is at *Bedford, Cuyahoga County, Ohio*, on the north corner of the town hall, on the face of the fourth course of foundation stones from the top, and is a chiseled cross.

Bridge.—Is 1.52 miles north of *Macedonia, Summit County, Ohio*, on the southwest corner of the girder bridge over the highway, on the coping stone of the foundation, and is a chiseled square.

1004 Cleve.—Is at *Macedonia, Summit County, Ohio*, on the southwest wing wall of the girder bridge over the road, in the highest step, and is a bronze tablet marked 1004 CLEVELAND.

Wall.—Is at *Little York, Summit County, Ohio*, 350 feet south of the station, on the north end of the arch wall, on the east side of the highway, and is a chiseled square.

Rock.—Is at *Highland Springs, Summit County, Ohio*, at the northwest corner of the crossroads, on a rock in the fence corner, and is a chiseled square.

1002 Cleve.—Is 0.27 mile south of *Seasons, Summit County, Ohio*, at the southeast corner of the girder bridge, on the coping stone of the parapet wall, and is an aluminum tablet marked 1002 CLEVELAND 1902.

1012 Cleve.—Is at *Silver Lake Junction, Summit County, Ohio*, at the southwest end of a large stone arch bridge over Cuyahoga River, on the end coping stone of the west side wall, and is an aluminum tablet marked 1012 CLEVELAND 1902.

Wall.—Is at *East Akron Junction, Summit County, Ohio*, at the northwest corner of the stone arch bridge over Cleveland Terminal and Valley Railroad, on the top stone of wing wall, and is a chiseled square marked B M.

983 Cleve.—Is at *East Akron, Summit County, Ohio*, 520 feet south of the station, on the north abutment of a girder bridge, between the tracks, on the coping stone, and is an aluminum tablet marked 983 CLEVELAND 1902.

1076 Cleve.—Is at *Myersville, Summit County, Ohio*, 200 feet northeast of the station, on the northeast corner of the highway bridge, on the southeast corner of the foundation stone, and is a bronze tablet marked 1076 CLEVELAND.

1069 Canton.—Is at *New Berlin, Stark County, Ohio*, 400 feet east of the Cleveland Terminal and Valley Railroad highway bridge over Nimisila Creek, on the northeast corner of the west abutment, on the coping stone, and is a bronze tablet marked 1069 CANTON 1901.

Bridge 43.—Is 1.59 miles south of *New Berlin, Stark County, Ohio*, on the north corner of bridge No. 43 over a brook, on the coping stone of the foundation, and is a chiseled square.

Bridge 44.—Is 2.08 miles south of *New Berlin, Stark County, Ohio*, on the west abutment of bridge No. 44 over a brook, on the foundation, on the coping stone, and is a chiseled square.

Bridge 77.—Is at *Canton, Stark County, Ohio*. (See p. 765.)

DESCRIPTIONS OF PERMANENT BENCH MARKS FROM MONACA, PA., TO LIMA, OHIO.

[From information furnished by the U. S. Geological Survey.]

25 C.—Is near *Monaca, Pa.*, and is seat cut in southwest end of land pier, Pittsburgh and Lake Erie Railroad bridge over Ohio River (between Monaca and Beaver, Pa.). Pier on right shore of river. Bench mark 3 inches below top of nineteenth course of stone from top of pier and 3 feet east of west side of pier, marked U. S. B. M.

Depot.—Is near *Monaca, Pa.*, and is on the southeast corner of the water table to the depot.

Bridge 26.—Is near *New Brighton, Pa.*, and is on the northeast corner of the east bridge seat, bridge No. 26.

Bridge.—Is near *New Brighton, Pa.*, and is on the northeast corner of the east bridge seat, over public road.

Depot.—Is at *New Brighton, Pa.*, and is on the southeast corner of the water table to the depot.

Bridge 29.—Is at *Kenwood, Pa.*, and is on the northeast corner of the east back wall, bridge 29.

Depot.—Is at *Beaver Falls, Pa.*, and is on the northeast corner of the doorsill of the depot.

Depot.—Is at *Geneva, Pa.*, and is on the southeast corner of the east doorsill of the depot.

Bridge 34.—Is at *Mansfield, Pa.*, and is on the northeast corner of the east bridge seat, bridge 34.

Bridge 38.—Is at *Homewood, Pa.*; top step of the northeast wing wall, bridge 38.

Bridge 39.—Is near *Homewood, Pa.*; northeast corner of the east back wall, bridge 39.

Bridge 40.—Is at *Summit, Pa.*; northeast corner of the east back wall, bridge 40.

Bridge 41.—Is at *Harlow, Pa.*; northeast corner of the north coping of bridge 41.

Bridge 42.—Is at *New Galilee, Pa.*; northeast corner of the east back wall of bridge 42.

Bridge 44.—Is near *New Galilee, Pa.*; northwest corner of bridge seat 44, KY tower, L. Beaver.

Bridge.—Is at *McCowans Crossing, Pa.*; northeast corner of bridge seat.

Depot.—Is at *Enon, Pa.*; southeast corner of the projecting water table on depot.

Bridge 45.—Is near *Enon, Pa.*; northeast corner of the north coping of bridge 45.

Bridge 45½.—Is near *Ohio-Pennsylvania State Line*; northeast corner of the north coping of bridge 45½.

Bridge 46.—Is near *Ohio-Pennsylvania State Line*; northeast corner of the east bridge seat of bridge 46.

Coal Tipple.—Is near *Ohio-Pennsylvania State Line*; southeast corner of the south-east pier of coal tipple.

Bridge 47.—Is near *East Palestine, Ohio*; northwest corner of the east bridge seat of bridge No. 47.

Bridge 48.—Is at *East Palestine, Ohio*; northwest corner of the east bridge seat of bridge No. 48.

Bridge 49.—Is near *East Palestine, Ohio*; northwest corner of the east bridge seat of bridge No. 49.

Bridge 50.—Is near *East Palestine, Ohio*; northwest corner of the east bridge seat of bridge No. 50, Mgr. R. Crossing.

Bridge 50½.—Is near *East Palestine, Ohio*; northwest corner of the east bridge seat of bridge No. 50½, Mgr. R. Crossing.

Bridge.—Is at *New Waterford, Ohio*; northeast corner of the north coping of bridge.

Bridge 51.—Is near *New Waterford, Ohio*; northwest corner of the east bridge seat of bridge No. 51.

Bridge 52.—Is near *Columbiana, Ohio*; northwest corner of the east bridge seat of bridge No. 52.

Depot.—Is at *Columbiana, Ohio*; southwest corner of the doorsill of the depot.

Bridge 54.—Is near *Columbiana, Ohio*; northeast corner of the north coping of bridge No. 54.

Bridge 55.—Is near *Columbiana, Ohio*; northwest corner of the east bridge seat of bridge No. 55.

Bridge 56.—Is near *Columbiana, Ohio*; northeast corner of the north coping of bridge No. 56, C. T. Tower.

Bridge 58.—Is near *Leetonia, Ohio*; northwest corner of the east bridge seat of bridge No. 58.

Water table.—Is near *Leetonia, Ohio*; northwest corner of the northwest pedestal to water table.

Bridge 59.—Is near *Leetonia, Ohio*; northwest corner of the east back wall of bridge No. 59.

Bridge.—Is near *Leetonia, Ohio*; top of the northeast wing wall of bridge.

Bridge 60.—Is near *Leetonia, Ohio*; northwest corner of the east bridge seat of bridge No. 60, C. F. Tower.

Bridge 61.—Is near *Sells Crossing, Ohio*; northwest corner of the east back wall of bridge No. 61.

Depot.—Is at *Salem, Ohio*; southwest corner of the west doorsill of the waiting room in the depot.

Bridge 63.—Is near *Salem, Ohio*; northwest corner of the east bridge seat of bridge No. 63.

Bridge.—Is near *Salem, Ohio*; southeast corner of the north pier of the overhead bridge.

Culvert.—Is near *Garfield, Ohio*; northwest corner of the cover stone on box culvert.

Culvert.—Is near *Beloit, Ohio*; southwest corner of the cover stone on box culvert.

Culvert.—Is near *Sebring, Ohio*; northeast corner of the east abutment on box culvert.

Culvert.—Is near *Sebring, Ohio*; northeast corner of the east abutment on open culvert.

Bridge 64.—Is near *Sebring, Ohio*; northeast corner of the east back wall of bridge No. 64.

Bridge 65.—Is near *Alliance, Ohio*; northwest corner of the east abutment of bridge No. 65.

Lunch Room.—Is at *Alliance, Ohio*; northwest corner of the lunch room.

Bridge 66.—Is near *Alliance, Ohio*; northwest corner of the east abutment of bridge No. 66.

Culvert.—Is near *Alliance, Ohio*; northeast corner of the top of Mas. stone box culvert.

Bridge 67.—Is at *Maximo, Ohio*; northeast corner of the coping on north side of track on bridge No. 67.

Coping stone.—Is near *Maximo, Ohio*; east end of north coping stone.

Bridge 68.—Is near *Louisville, Ohio*; northwest corner of the east abutment of bridge No. 68.

Bridge 69.—Is at *Louisville, Ohio*; northwest corner of the east abutment of bridge No. 69.

Bridge.—Is near *Louisville, Ohio*; northwest corner of the east abutment of bridge.

Bridge.—Is near *Fairhope, Ohio*; northwest corner of the east abutment of bridge (solid floor cal.).

Bridge 72.—Is near *Fairhope, Ohio*; northwest corner of the east abutment of bridge No. 72.

Bridge 73.—Is near *Canton, Ohio*; northwest corner of the east abutment of bridge No. 73.

Bridge 76.—Is near *Canton, Ohio*; northwest corner of the east abutment of bridge No. 76.

Bridge 77.—Is near *Canton, Ohio*; northwest corner of east abutment of bridge No. 77; a chiseled square.

Bridge 78.—Is near *Massillon, Ohio*; northeast corner of the east top of arch of bridge No. 78.

Bridge 79.—Is near *Massillon, Ohio*; bridge No. 79.

Bridge 80.—Is near *Massillon, Ohio*; north end of east abutment of bridge No. 80.

Bridge 83.—Is near *Massillon, Ohio*; north end of east abutment of bridge No. 83.

Bridge.—Is near *Massillon, Ohio*; northeast corner of the coping of bridge column.

Bridge 84.—Is at *Massillon, Ohio*; north end of the east back wall of bridge No. 84.

Bridge 86.—Is near *Massillon, Ohio*; northwest corner of the east abutment of bridge No. 86.

Culvert.—Is near *Newman, Ohio*; northeast corner of the east abutment of S. F. branch culvert.

Culvert.—Is near *Newman, Ohio*; north end of east abutment of S. F. branch culvert.

Bridge 88.—Is near *Lawrence, Ohio*; northwest corner of the east abutment of bridge No. 88.

Bridge 89.—Is at *Lawrence, Ohio*; north end of the east abutment of bridge No. 89.

Bridge 90.—Is near *Lawrence, Ohio*; north end of the east abutment of bridge No. 90.

Bridge 91.—Is near *Lawrence, Ohio*; north end of the east abutment of bridge No. 91.

Culvert.—Is near *Lawrence, Ohio*; northeast corner of the east abutment of S. F. branch culvert.

Culvert.—Is near *Fairview, Ohio*; north end of the east abutment of S. F. branch culvert.

Bridge.—Is near *Fairview, Ohio*; northwest corner of the east abutment of I. B. bridge.

Bridge 97.—Is near *Fairview, Ohio*; north end of the east parapet of bridge No. 97, W. Ast.

Bridge 98.—Is near *Fairview, Ohio*; northwest corner of the east back wall of bridge No. 98.

Bridge 99.—Is near *Orville, Ohio*; north end of the east abutment of bridge No. 99.

Culvert.—Is near *Orville, Ohio*; northeast corner of the east abutment of S. F. branch culvert.

Depot.—Is at *Orville, Ohio*; east end, north doorsill of the gentlemen's room of the depot at Orville.

Bridge.—Is near *Orville, Ohio*; northwest corner of the east abutment of I. B. bridge.

Bridge.—Is near *Orville, Ohio*; northwest corner of the east abutment.

Bridge.—Is near *Orville, Ohio*; northwest corner of the east abutment.

Bridge.—Is near *Orville, Ohio*; northwest corner of the east abutment.

Bridge 100.—Is near *Smithville, Ohio*; northwest corner of the east abutment of bridge No. 100.

Bridge 102.—Is near *Smithville, Ohio*; northwest abutment of bridge No. 102.

Culvert.—Is near *Smithville, Ohio*; northeast corner of the box culvert.

Bridge 103.—Is near *Smithville, Ohio*; northwest corner of the east abutment of bridge No. 103.

Bridge.—Is near *Smithville, Ohio*; northwest corner of the east abutment of I. B. bridge.

Stone arch.—Is near *Smithville, Ohio*; northeast corner of the parapet stone arch.

Bridge.—Is near *Wooster, Ohio*; northeast corner of the east abutment of I. B. bridge.

Bridge 106.—Is near *Wooster, Ohio*; northwest corner of the east abutment of bridge No. 106.

Bridge.—Is near *Wooster, Ohio*; northeast corner of the east abutment of I. B. bridge.

Depot.—Is at *Wooster, Ohio*; northeast doorsill of the ladies' waiting room.

Bridge.—Is near *Wooster, Ohio*; northwest corner of the east parapet of plate-girder bridge.

Bridge 110.—Is near *Wooster, Ohio*; northeast corner of the east parapet wall of bridge No. 110.

- Bridge 112.—Is near *Wooster, Ohio*; northwest corner of the east parapet of bridge No. 112.
- Bridge 115.—Is near *Wooster, Ohio*; northeast corner of the east abutment of bridge No. 115.
- Bridge 117.—Is near *Wooster, Ohio*; northeast corner of the east abutment of bridge No. 117.
- Bridge 120.—Is near *Wooster, Ohio*; northeast corner of the east parapet of bridge No. 120.
- Coal Tipple.—Is near *Wooster, Ohio*; northeast pier of the coal tipple.
- Bridge 121.—Is near *Shreve, Ohio*; northeast corner of the east abutment of bridge No. 121.
- Bridge.—Is near *Shreve, Ohio*; northeast corner of the east abutment of I. B. bridge.
- Bridge 124.—Is near *Shreve, Ohio*; east abutment of bridge No. 124.
- Depot.—Is at *Shreve, Ohio*; water table on the southeast con. ticket of Shreve.
- Arch.—Is near *Custaloga, Ohio*; northwest corner of the top step of the east wall to arch.
- Culvert.—Is near *Custaloga, Ohio*; northeast corner stone of the box culvert.
- Bridge 128.—Is near *Big Prairie, Ohio*; northeast corner of the east abutment of bridge No. 128.
- Bridge 129.—Is near *Lakeville, Ohio*; northwest corner of the west abutment of bridge No. 129.
- Bridge 131.—Is near *Lakeville, Ohio*; northwest corner of the east abutment of bridge No. 131.
- Bridge 132.—Is near *Lakeville, Ohio*; abutment of bridge No. 132.
- Bridge 134.—Is near *Lakeville, Ohio*; northeast corner of the coping C. stone arch of bridge 134.
- Bridge 136.—Is near *Lakeville, Ohio*; northeast corner of the coping C. stone arch of bridge No. 136.
- Bridge 137.—Is near *Lakeville, Ohio*; northeast corner of the east abutment of bridge No. 137.
- Bridge 138.—Is near *Londonville, Ohio*; northeast corner of the east abutment of bridge No. 138 E.
- Culvert.—Is near *Londonville, Ohio*; northwest corner of the stone box culvert.
- Bridge 139.—Is near *Londonville, Ohio*; northwest corner of the first step of the east wall of N. S. bridge 139.
- Bridge.—Is near *Londonville, Ohio*; northeast corner of the east abutment of I. B. bridge.
- Culvert.—Is near *Perryville, Ohio*; north end of the east abutment of the culvert.
- Bridge 141.—Is near *Perryville, Ohio*; northeast corner of the second step E. par. bridge 141.
- Bridge 142.—Is near *Perryville, Ohio*; northeast corner of the east abutment of bridge 142.
- Bridge 143.—Is near *Perryville, Ohio*; northeast corner of the second step of bridge 143.

Bridge 144.—Is near *Perryville, Ohio*; northwest corner of the east abutment of bridge 144.

Bridge 145.—Is near *Perryville, Ohio*; northwest corner of the east abutment of bridge 145.

Bridge 145½.—Is near *Lucas, Ohio*; northwest corner of the east abutment of bridge 145½.

Bridge 146.—Is near *Lucas, Ohio*; northwest corner of the east abutment of bridge 146.

Bridge 147.—Is near *Lucas, Ohio*; northeast corner of the north coping C. arch of bridge 147.

Culvert.—Is near *Lucas, Ohio*; northeast corner of the north coping of culvert.

Bridge 150.—Is near *Lucas, Ohio*; northwest corner of the east abutment of bridge 150.

Bridge 151.—Is near *Mansfield, Ohio*; northwest corner of the east back wall of bridge 151.

Bridge 152.—Is near *Mansfield, Ohio*; northeast corner of the east abutment of bridge 152.

Bridge 154.—Is near *Mansfield, Ohio*; northeast corner of the east abutment of bridge 154.

Culvert.—Is near *Mansfield, Ohio*; northeast corner of the north coping of culvert.

Bridge 155.—Is near *Mansfield, Ohio*; northwest corner of the east abutment of bridge 155.

Culvert.—Is near *Mansfield, Ohio*; northeast corner of the north coping of culvert.

Bridge 156.—Is near *Mansfield, Ohio*; northeast corner of the east abutment of bridge 156.

Bridge 157.—Is near *Mansfield, Ohio*; northeast corner of the east abutment of bridge 157.

Culvert.—Is near *Toledo Junction, Ohio*; northeast corner of the north coping of culvert.

Bridge 159.—Is near *Toledo Junction, Ohio*; northwest corner of the east abutment of bridge 159.

Bridge 160.—Is near *Toledo Junction, Ohio*; northeast corner of the east abutment of bridge 160.

Culvert.—Is near *Toledo Junction, Ohio*; northeast corner of the north coping of culvert.

Bridge 161.—Is near *Cookton, Ohio*; northeast corner of the north coping stone arch of bridge 161.

Culvert.—Is near *Cookton, Ohio*; northeast corner of the north coping of culvert.

Bridge 162.—Is near *Cookton, Ohio*; northwest corner of the east abutment of bridge 162.

Culvert.—Is near *Cookton, Ohio*; northeast corner of the north coping stone arch of culvert.

Bridge 164.—Is near *Crestline, Ohio*; northeast corner of the east abutment of bridge 164.

Bridge 165.—Is near *Crestline, Ohio*; northwest corner of the east abutment of bridge 165.

Bridge 166.—Is near *Crestline, Ohio*; northeast corner of the east abutment of bridge 166.

Bridge 167.—Is near *Crestline, Ohio*; northeast corner of the east abutment of bridge 167.

Arch.—Is at *Crestline, Ohio*; northwest corner of the north coping of stone arch.

Shop.—Is at *Crestline, Ohio*; northeast corner of the carpenter shop.

Bridge 4.—Is at *Crestline, Ohio*; center of the north coping of bridge 4.

Bridge 11.—Is near *Robinson, Ohio*; top of the flange of pipe on the south side of bridge 11. (Not very good.)

Bridge 13.—Is near *Robinson, Ohio*; southwest corner of the south coping of bridge 13.

Depot.—Is at *Bucyrus, Ohio*; northeast corner of the doorsill of the men's waiting room in the depot.

Bridge 25.—Is near *Bucyrus, Ohio*; northeast corner of the east abutment of bridge 25.

Bridge 28.—Is near *Bucyrus, Ohio*; southeast corner of the south coping of bridge 28.

Bridge 35.—Is near *Bucyrus, Ohio*; northeast corner of the west abutment of bridge 35.

Bridge 37.—Is near *Bucyrus, Ohio*; northwest corner of the north coping of bridge 37.

Bridge 39.—Is near *Bucyrus, Ohio*; northeast corner of the north coping of bridge 39.

Bridge 40.—Is near *Nevada, Ohio*; northeast corner of the north coping of bridge 40.

Bridge 41.—Is near *Nevada, Ohio*; northeast corner of the north coping of bridge 41.

Bridge 45.—Is near *Nevada, Ohio*; northeast corner of the north coping of bridge 45.

Bridge 47.—Is near *Nevada, Ohio*; northeast corner of the north coping of bridge 47.

Bridge 51.—Is near *Nevada, Ohio*; northwest corner of the east ballast wall of bridge 51.

Bridge 54.—Is near *Nevada, Ohio*; northeast corner of the north coping of bridge 54.

Bridge 62.—Is near *Nevada, Ohio*; northeast corner of the north coping of bridge 62.

Bridge 65.—Is near *Upper Sandusky, Ohio*; northeast corner of the north coping of bridge 65.

Bridge 66.—Is near *Upper Sandusky, Ohio*; northeast corner of the north coping of bridge 66.

Bridge 69.—Is near *Upper Sandusky, Ohio*; northwest corner of the east back wall of bridge 69.

Bridge 73.—Is near *Upper Sandusky, Ohio*; northwest corner of the north coping of bridge 73.

Bridge 74.—Is near *Upper Sandusky, Ohio*; northwest corner of the east bridge seat of bridge 74.

Bridge 75.—Is near *Upper Sandusky, Ohio*; northwest corner of the east bridge seat of bridge 75.

Bridge 76.—Is near *Kirby, Ohio*; southwest corner of the east bridge seat of bridge 76.

Bridge 77.—Is near *Kirby, Ohio*; northeast corner of the north coping of bridge 77.

Bridge 81.—Is near *Kirby, Ohio*; northeast corner of the north coping of bridge 81.

Bridge 85.—Is near *Kirby, Ohio*; northeast corner of the north coping of bridge 85.

Bridge 86.—Is near *Kirby, Ohio*; northeast corner of the north coping of bridge 86.

Bridge 88.—Is near *Forest, Ohio*; northeast corner of the north coping of bridge 88.

Bridge 93.—Is near *Forest, Ohio*; southwest corner of the south coping of bridge 93.

Bridge 95.—Is near *Forest, Ohio*; top step of the northeast wing wall of bridge 95.

Bridge 98.—Is near *Forest, Ohio*; northwest corner of the east back wall of bridge 98.

Bridge 103.—Is near *Dunkirk, Ohio*; northeast corner of the step on the northwest wing wall of bridge 103.

Bridge 104.—Is near *Dunkirk, Ohio*; northeast corner of the north coping of bridge 104.

Building.—Is near *Dunkirk, Ohio*; southeast corner of the water table of Be. Building, north of the track on the west side of Main street.

Bridge 108.—Is near *Washington, Ohio*; southwest corner of the east bridge seat of bridge 108.

Bridge 110.—Is near *Washington, Ohio*; northeast corner of the west bridge seat of bridge 110.

Bridge 112.—Is near *Washington, Ohio*; northwest corner of the east abutment of bridge 112.

Bridge 114.—Is near *Ada, Ohio*; northwest corner of the east abutment of bridge 114.

Bridge 116.—Is near *Ada, Ohio*; northeast corner of the west abutment of bridge 116.

Bridge 119.—Is near *Ada, Ohio*; northeast corner of the west back wall of bridge 119.

Bridge 124.—Is near *Ada, Ohio*; northwest corner of the east abutment of bridge 124.

Bridge 132.—Is near *Ada, Ohio*; southwest corner of the south coping of bridge 132.

Bridge 135.—Is near *Ada, Ohio*; southeast corner of the south coping of bridge 135.

Bridge 138.—Is near *Lafayette, Ohio*; southeast corner of the south coping of culvert 138.

Bridge 141.—Is near *Lafayette, Ohio*; southeast corner of the south coping of culvert 141.

Bridge 148.—Is near *Lafayette, Ohio*; northwest corner of the east abutment of bridge 148.

Bridge 151.—Is near *Lafayette, Ohio*; northwest corner of the north coping of culvert 151.

Bridge 157.—Is near *Lima, Ohio*; northwest corner of the north coping of culvert 157.

Bridge 159.—Is near *Lima, Ohio*; northwest corner of the north coping of culvert 159.

Bridge 160.—Is near *Lima, Ohio*; southwest corner of the east back wall of bridge 160.

Bridge 163.—Is near *Lima, Ohio*; northeast corner of the north coping of bridge 163.

Depot.—Is at *Lima, Ohio*; northeast corner of the women's waiting room in the station at Lima.

U₁.—Is at *Lima, Ohio*. (See p. 657, App. 8 of Report for 1899.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN SOLOMON AND ANTHONY, KANS.

W₂.—At *Solomon, Dickinson County, Kans.* (See App. 8 of Report for 1899, p. 647.)

X₂.—At *Solomon, Dickinson County, Kans.* (See App. 8 of Report for 1899, p. 647.)

This bench mark has been destroyed.

C₁.—At *Solomon, Dickinson County, Kans.* (See App. 8 of Report for 1899, p. 579.)

D₁.—At *New Cambria, Saline County, Kans.* (See App. 8 of Report for 1899, p. 579.)

E₁.—Is near *New Cambria, Saline County, Kans.* (See App. 8 of Report for 1899, p. 579.)

Salina East Base Δ .—Is near *New Cambria, Saline County, Kans.* (See App. 8 of Report for 1899, p. 580.)

Salina West Base Δ .—Is near *Salina, Saline County, Kans.* (See App. 8 of Report for 1899, p. 580.)

F₁.—At *Salina, Saline County, Kans.* (See App. 8 of Report for 1899, p. 580.)

G₁.—At *Salina, Saline County, Kans.* (See App. 8 of Report for 1899, p. 580.)

H₁.—At *Salina, Saline County, Kans.* (See App. 8 of Report for 1899, p. 580.)

A₄.—Is in *Mentor, Saline County, Kans.*, T. 15, R. 2 W., on the right of way of the Salina and Southwestern Railway, 3.5 meters north of the station sign, 11.1 meters north of the public road. (See note 14, p. 581.)

B₄.—Is at *Assaria, Saline County, Kans.*, T. 16, R. 3 W., on the right of way of the Salina and Southwestern Railway, 18.8 meters north of the station and 3.8 meters north of the first telegraph pole north of the station, in line with the telegraph poles, between the tracks of the Salina and Southwestern Railway and a public road, being 9.3 meters west of the former and 10 meters east of the latter. (See note 14, p. 581.)

C₄.—Is at *Bridgeport, Saline County, Kans.*, T. 16, R. 3 W., on the right of way of the Salina and Southwestern Railway, nearly at the intersection of the north and west platforms of the depot, 2.8 meters north from the north face of the depot and 5.4 meters east of the center of the Salina and Southwestern Railway tracks. (See note 14, p. 581.)

D₄.—Is in *Lindsborg, McPherson County, Kans.*, T. 17, R. 3 W., on the east face of the large three-story brick gristmill, 25 paces west of the Salina and Southwestern Railway, owned by the Lindsborg Milling and Elevator Company (Incorporated), 1.82 meters south of the northeast corner of the mill and 3.05 meters north of the north side of the large doorway to the mill, on the east side. (See note 8, p. 581.)

E₄.—Is at *Johnstown, McPherson County, Kans.*, T. 18, R. 3 W., 4 meters directly east of the station post and 8.2 meters east of the center of the railroad track. (See note 14, p. 581.)

F₄.—Is at *Hilton, McPherson County, Kans.*, T. 19, R. 3 W., on the land of the Peavey Elevator Company, between the office and the elevator, 4.7 meters north of the north face of the elevator and 3.3 meters south of the south face of the office, 13.7 meters east of the center of the main track and 4.6 meters east of the center of the switch. (See note 14, p. 581.)

G₄.—Is at *McPherson, McPherson County, Kans.*, T. 19, R. 3 W., on the stone slab at the south side of the base of the standpipe which supplies McPherson with water, 55

paces northwest of the waterworks station, 54 paces east of the center of the main track of the Salina and Southwestern Railway. (See note 3, p. 580.)

H₄.—Is at *McPherson, McPherson County, Kans.*, T. 19, R. 3 W., on the stone steps of the main doorway on the south side of the McPherson Opera House, on the east end of the second stone step from the bottom, about 0.3 meter from the east stone column supporting the archway over the entrance. (See note 3, p. 580.)

I₄.—Is about 1½ miles west of *McPherson, McPherson County, Kans.*, T. 19, R. 3 W., on the right of way of the Chicago, Rock Island and Pacific Railway, at the junction of the Chicago, Rock Island and Pacific Railway with the Missouri Pacific Railway, in the southwest corner formed by the intersection of the two roads, 14 meters from the center of the Chicago, Rock Island and Pacific track and 16 meters from the center of the Missouri Pacific track. (See note 14, p. 581.)

J₄.—Is at *Groveland, McPherson County, Kans.*, T. 20, R. 4 W., on the property of the Chicago, Rock Island and Pacific Railway, 1.55 meters south of their elevator office, 27.5 meters east of the center of the main track, and 12.5 meters east of the center of the siding leading to their office. (See note 14, p. 581.)

K₄.—Is at *Inman, McPherson County, Kans.*, T. 21, R. 4 W., on the property of Mr. Henry Vogt, 0.7 meter north of the northwest corner of his lumber-yard office, 4.3 meters south of the hydrant adjacent to the office on the north side, about 250 feet east of the main track of the Chicago, Rock Island and Pacific Railway, and about 185 feet east of the center of the siding. (See note 14, p. 581.)

L₄.—Is at *Medora, Reno County, Kans.*, T. 22, R. 5 W., in the northwest corner of the lot owned by Mr. Benjamin Richard, upon which is a large building used as a hotel, the largest building in the town, 62 paces southeast of the southeast corner of the Chicago, Rock Island and Pacific Railway, and 20 paces north of the northwest corner of the hotel. (See note 14, p. 581.)

M₄.—Is about 1 mile east of *Hutchinson, Reno County, Kans.*, T. 22, R. 5 W., on the State Reformatory, on the north side of the southwest pavilion, on the sill of the second window from the northwest corner, 13 centimeters from the east side of the window and 1.06 meters from the west side. (See note 5, p. 580.)

N₄.—Is at *Hutchinson, Reno County, Kans.*, at the west entrance to the First Presbyterian Church, at the corner of Sherman and Poplar streets, on the north end of the top step. (See note 14, p. 581.)

O₄.—Is at *Hutchinson, Reno County, Kans.*, at the southwest entrance to the Citizens' Bank, at the corner of Second and Main streets, on the northwest end of the top step. (See note 3, p. 580.)

P₄.—Is at *Fernie, Reno County, Kans.*, a stock siding on the Hutchinson and Southern Railway (Atchison, Topeka and Santa Fe), in T. 22, R. 6 W., 4.7 meters south of the south fence of the stock yard, and 13.4 meters east of the center of the main track. (See note 14, p. 581.)

Q₄.—Is at *Darlow, Reno County, Kans.*, T. 24, R. 6 W., on the right of way of the Hutchinson and Southern Railway (Atchison, Topeka and Santa Fe), 7.2 meters south of the mail crane and 2.6 meters west of the center of the main track, 5.6 meters south of the south wall of the general merchandise store of Mrs. Ottir Umstat. (See note 14, p. 581.)

R₄.—Is at *Castleton, Reno County, Kans.*, T. 25, R. 6 W., on the right of way of the Hutchinson and Southern Railway, 5.7 meters east of the center of the main track and 2.0 meters north of the north face of the railroad station. (See note 14, p. 581.)

S₄.—Is at the town of *Pretty Prairie, Reno County, Kans.*, T. 26, R. 6 W., at the northeast corner of the property owned by Mr. Peter Kabiell, of Pretty Prairie, about 35 paces west of the center of the main track of the Hutchinson and Southern Railway (Atchison, Topeka and Santa Fe), and about 25 paces directly south of Hollingwood's granary. (See note 14, p. 581.)

T₄.—Is about one-fourth of a mile south and one-half mile east of *Pretty Prairie, Reno County, Kans.*, at the intersection of the range and section line at the northeast corner of section 24, township 26 S., about one-half mile northwest from triangulation station of Pretty Prairie. (See note 14, p. 581.)

U₄.—Is at *Varner, Kingman County, Kans.*, T. 27 S., R. 7 W., on the right of way of the Hutchinson and Southern Railway, in line with the telegraph poles, 15 meters north of the center of the public road through Varner, 9.5 meters west of the center of the main track. (See note 14, p. 581.)

V₄.—Is at *Lashmet, Kingman County, Kans.*, T. 27 S., R. 7 W., on the right of way of the Hutchinson and Southern Railway, directly north of the station platform, 4 meters west of the center of the track, 34 meters north of the center of the public road at Lashmet, and 37 paces northeast of the northeast corner of the house owned by John Lashmet. (See note 14, p. 581.)

W₄.—Is at *Kingman, Kingman County, Kans.*, at the west entrance to the First National Bank, in the foundation stone which forms the top step, 0.16 meter south of the main wall of the building, 0.15 meter south of the north end of the stone step, and 0.22 meter east of the west edge. (See note 3, p. 580.)

X₄.—Is about $3\frac{1}{8}$ miles south and $2\frac{1}{4}$ miles west of the city hall at *Kingman, Kingman County, Kans.*, T. 28 S., R. 8 W., 35.6 meters northwest of the schoolhouse and 350 paces directly east of the windmill which marks the triangulation station Kingman. (See note 14, p. 581.)

A copper bolt with cross in top is leaded into the north side of the stone, and intersection of the cross lines is 0.4427 meter below the bench mark.

Y₄.—Is at *Carvel, Kingman County, Kans.*, T. 29 S., R. 8 W., on the right of way of the Hutchinson and Southern Railway, and 1.15 meters northwest from the northwest face of the mill owned by D. N. Barnhill, of Carvel, 16.3 meters southwest from the center of the main track of the railway. (See note 14, p. 581.)

Z₄.—Is at *Basil, Kingman County, Kans.*, T. 29 S., R. 7 W., 29 paces west of the center of the side track at Basil, on the property of Mr. N. J. Blake, of Basil, in line with the front line of his porch, 0.7 meter from the northeast corner. (See note 14, p. 581.)

A₅.—Is at *Rago, Kingman County, Kans.*, T. 30 S., R. 7 W., 34 paces southeast of the intersection of the Englewood and the Hutchinson and Southern branches of the Atchison, Topeka and Santa Fe Railway, 18 paces directly south of the Englewood branch, on the northwest corner of the property of Dave Stratton, of Rago. (See note 14, p. 581.)

B₅.—Is at *Duquoin, Harper County, Kans.*, T. 31 S., R. 7 W., 44 paces directly west of the Atchinson, Topeka and Santa Fe tracks, pacing from a point about 30 feet north of the depot, 3.18 meters northeast of the northeast corner of a building occupied by Mr. Maxwell as a general merchandise store. (See note 14, p. 581.)

C₅.—Is at *Harper, Harper County, Kans.*, T. 32 S., R. 7 W., in the west face of a building on the northeast corner of Central avenue and Main street, controlled by Attorney Nashburn, of Harper, and occupied as a barber shop by M. E. Parker, and an implement and supply house by Clarence Rogers. It is on the sixteenth brick above the foundation and on the third brick from the north side of the window in the southwest corner of the building. (See note 8, p. 581.)

D₅.—Is at *Ascot, Harper County, Kans.*, T. 33 S., R. 7 W., on the right of way of the Hutchinson and Southern Railway, between the switch and main track, 7.1 meters west of the center of the main track and 7.2 meters east of the center of the switch; in line with the station sign at Ascot. (See note 14, p. 581.)

E₅.—Is at *Anthony, Harper County, Kans.*, exactly 1 kilometer northwest of Anthony Southeast Base, along the line of the base and about 150 paces east of the Atchinson, Topeka and Santa Fe tracks. (See note 14, p. 581.)

Anthony S. E. B. Δ .—Is at the triangulation station Anthony Southeast Base, 1 $\frac{1}{8}$ miles north of the schoolhouse at *Anthony, Kans.*, about 89 meters east of Springfield avenue, on the north side of a road, on the property of R. R. Beam. (See note 31, p. 583.)

Anthony N. W. B. Δ .—Is at the triangulation station Anthony Northwest Base, about equally distant from the towns of *Anthony* and *Harper, Harper County, Kans.*, on land belonging to W. W. Millican, of Thorntown, Ind. (See note 31, p. 583.)

F₅.—Is at *Anthony, Harper County, Kans.*, T. 33 S., R. 7 W., on the property of the Poorman Milling Company, 3 paces north of their office, 21 paces from the middle of the road east of their office. (See note 14, p. 581.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN BOWIE, TEX., AND ANTHONY, KANS.

1124 Gainv.—Is a bench mark of the U. S. Geological Survey at *Bowie, Montague County, Tex.*, at Brown Hotel, known in 1902 as Bowie Hotel, 100 feet east of the Fort Worth and Denver City Railway station, at the southwest corner of the street, and is an iron post marked 1124 Gainv.

A.—Is at *Bowie, Montague County, Tex.*, about 300 meters north of the Chicago, Rock Island and Texas Railway station, about 25 feet west of the main track of the Chicago, Rock Island and Texas Railway, and 10 feet below the same, on the west side of a stone culvert, 3 $\frac{1}{2}$ feet from the southwest corner, 3 inches from the edge of the stone. (See note 5, p. 580.)

B.—Is at *Bowie, Montague County, Tex.*, on the north side of the City National Bank building, in the fourth brick west of the third double window and 4 feet from the ground. (See note 8, p. 581.)

C.—Is 6 miles west of *Bowie, Montague County, Tex.*, about 30 feet south of the railroad track, in a rock *in situ*, on a line between the third and fourth telegraph poles west of mile pole 75 on the Fort Worth and Denver City Railway, 20 inches from the north and 16 inches from the west edges of the stone. (See note 7, p. 580.)

Bowie N. W. Base Δ .—Is about a mile southeast of *Bellevue, Clay County, Tex.*, on a prominent knoll on the farm belonging to the Orton brothers. (See note 31, p. 583.)

Bowie S. E. Base Δ .—Is at the triangulation station Bowie Southeast Base, near *Bellevue, Clay County, Tex.*, on the highest part of a prominent ridge on the farm of C. H. Bodeker. (See note 31, p. 583.)

D.—Is 5 miles northwest of *Bowie, Tex.*, just south of milepole No. 539, on the west side of the track of the Chicago, Rock Island and Texas Railway, in the northwest corner of the south concrete abutment of a bridge. (See note 7, p. 581.)

989 Gainv.—Is a bench mark of the United States Geological Survey, and consists of an iron post marked 989 Gainv., 4 miles northwest of *Bowie, Montague County, Tex.*, 40 feet east of the Chicago, Rock Island and Texas Railway track, at a public road crossing, 210 feet south of milepole 540.

E.—Is at *Stoneburg, Montague County, Tex.*, on the southwest corner of the southwest one of the four inner stone blocks supporting the railway water tank, 4 inches from either edge. (See note 7, p. 581.)

936 Gainv.—Is a bench mark of the United States Geological Survey, and consists of an iron post marked 936 Gainv., at *Stoneburg, Montague County, Tex.*, 500 feet west of the Chicago, Rock Island and Texas Railway station, at the northeast corner of the post-office building.

876 Gainv.—Is a bench mark of the United States Geological Survey, and consists of an iron post marked 876 Gainv., $4\frac{1}{2}$ miles northwest of *Stoneburg, Montague County, Tex.*, 50 feet west of the railroad track, on the right of way, 50 feet south of milepole 531, opposite Walker's ranch.

897 Gainv.—Is a bench mark of the United States Geological Survey, and consists of an iron post marked 897 Gainv., 3 miles south of *Ringgold* and $7\frac{1}{2}$ miles northwest of *Stoneburg, Montague County, Tex.*, at the intersection of a public road and railroad crossing, 300 feet north of milepost 528, 46 feet east of the railroad track.

F.—Is south of *Ringgold, Montague County, Tex.*, $2\frac{1}{2}$ telegraph poles north of milepole 528.5, on the west side of Chicago, Rock Island and Texas Railway, 30 feet from the track and nearly in line with the poles, about in the center of the larger of two rocks *in situ*. (See note 7, p. 581.)

894 Gainv.—Is a bench mark of the United States Geological Survey, and consists of an iron post marked 894 Gainv., at *Ringgold, Tex.*, 180 feet east of the Missouri, Kansas and Texas Railway station, at the end of the platform, between the main tracks and the switch.

G.—Is in Texas, about a mile south of *Terral, Ind. T.*, north of *Ringgold, Montague County, Tex.*, and on the Chicago, Rock Island and Texas Railway bridge No. 3219, over Red River, in the top of the west side of the south concrete abutment, 8 inches from the north edge and 5 feet from the west edge. (See note 7, p. 581.)

809 Terral.—Is a bench mark of the United States Geological Survey, 1 mile south of *Terral, Ind. T.*, and consists of a copper bolt in the west end of the north pier of the Chicago, Rock Island and Texas Railway bridge over Red River, marked 809.

A.—Is at *Terral, Ind. T.*, in the northwest corner of the southeast pier supporting the railway water tank, 5 inches from either edge. (See note 7, p. 581.)

B.—Is 5 miles north of *Terral, Ind. T.*, in the west side of the stone culvert of the Chicago, Rock Island and Pacific Railway, south of milepole 514, 25 feet west of and 20 feet below the railroad track. (See note 7, p. 581.)

C.—Is 1 mile north of *Ryan, Ind. T.*, on the Chicago, Rock Island and Pacific Railway bridge No. 3212, over Beaver Creek, in the east side of the south abutment, 6 inches from the east and north edges of the stone. (See note 7, p. 581.)

827 Ryan.—Is a bench mark of the United States Geological Survey, 1 mile north of *Ryan, Ind. T.*, on the outside anchor bolt on the west side of the south pier of bridge 3212, over Beaver Creek. The bench mark is the highest point of the bolt.

Geol. Sugden.—Is a bench mark of the United States Geological Survey, a half-mile south of *Sugden, Ind. T.*, about 600 feet west of the railroad track and 1 000 feet east of "844 Sugden," and consists of an iron post without any elevation on the cap.

844 Sugden.—Is a bench mark of the United States Geological Survey, one-half mile south of *Sugden, Ind. T.*, at the standard corner of T. 5 S., Rs. 7 and 8 W., about 1 600 feet west of the point of intersection of the railroad with the first standard parallel south, and consists of an iron post stamped 844. It was reported in 1902 that this post was very loose in the ground and could easily be pulled up.

D.—Is at *Sugden, Ind. T.*, about 500 feet north of the railroad station, on the east side of the track in the angle of the right of way fence and the fence crossing the track, 4 feet from each fence and 45 feet from the nearest rail of the main track, and consists of a marble post 30 inches long, dressed to 6 by 6 inches and marked as in note 12 (p. 581).

875 Boundary.—Is a bench mark of the United States Geological Survey, 6 miles north of *Sugden, Ind. T.*, on the Indian Territory and Oklahoma boundary line, 600 feet west of the railroad track and about 2 000 feet south of milepole 500 on the Chicago, Rock Island and Pacific Railway. It consists of an iron post marked 875 feet and is milepost No. 10 on the boundary from the Red River.

883 Addington.—Is a bench mark of the United States Geological Survey in *Oklahoma Territory*, $4\frac{1}{2}$ miles south of *Addington, Ind. T.*, about 1 100 feet north of milepole 499, in the coping stone on the west end of the south pier of bridge 3202 over Cow Creek, and consists of a square hole cut in the stone.

918 Addington.—Is a bench mark of the United States Geological Survey at *Addington, Ind. T.*, and consists of a square hole cut in the northwest corner of the top stone of the north foundation and in the second tier from the front of the water tank. (See note 5, p. 580.)

E.—Is near *Addington, Ind. T.*, in the angle formed by the east right of way fence of the railroad and the first fence crossing the railroad track south of the station, about 200 feet east of the track, and consists of a marble post dressed to 6 by 6 inches and marked as in note 12, p. 581.

F.—Is about $3\frac{1}{2}$ miles north of *Addington, Ind. T.*, on the east side of the north abutment of a culvert just south of milepole 490, in the first step below the coping stone, 6 inches from either edge. (See note 7, p. 581.)

G.—Is a mile and a half south of *Comanche, Ind. T.*, just south of milepole 486, on the east side of the north abutment to bridge No. 3187, 12 inches from the east and south edges of the stone. (See note 5, p. 580.)

H.—Is at *Comanche, Ind. T.*, in a stone building owned by J. S. Minton, in the second stone column west of the entrance to the part of the building occupied by the owner, about 4 feet above the sidewalk. (See note 8, p. 581.)

I.—Is 4 miles north of *Comanche, Ind. T.*, in the coping of a railway culvert, 7 poles north of mile pole 481, on the west side of the track, in the northwest corner of the coping, about 6 inches from either edge. (See note 7, p. 581.)

J.—Is at *Duncan, Ind. T.*, in the northeast corner of a pier supporting the railway water tower on the south and east side, 4 inches from either edge, and in the lower tier. (See note 7, p. 581.)

1127 Duncan.—Is a bench mark of the United States Geological Survey, one-third of a mile north of *Duncan, Ind. T.*, on the Indian Base Line, at the quarter-section corner between T. 1 N., R. 7 W., sec. 32 and T. 1 S., R. 7 W., sec. 5, 1 000 feet west of the track, and consists of an iron post, 8 inches out of the ground, stamped 1127.

1104 Boundary.—Is a bench mark of the United States Geological Survey, on the Oklahoma-Indian Territory boundary, $2\frac{1}{2}$ miles west of *Duncan, Ind. T.*, and about one-half mile south of where the Duncan-Lawton wagon road crosses the boundary. It consists of an iron post marked 1104, and is milepost No. 33 on the boundary from the Red River.

Duncan Δ .—Is at Duncan triangulation station, in sec. 16, T. 1 S., R. 8 W., about 5 miles west and $1\frac{1}{2}$ miles south of *Duncan, Ind. T.*, on the top of a high flat hill with woods on the east and north. The bench mark is one decimeter west of the Δ . (See note 22, p. 582.) Check bench mark is an iron spike 10 inches long driven flush with the ground 6 decimeters from the east leg of the inner tripod and in a line with the leg and station mark, and is 0.0271 meter below B. M. Duncan Δ .

K.—Is $2\frac{1}{2}$ miles south of *Marlow, Ind. T.*, $1\frac{1}{2}$ poles north of milepole 468, on a $2\frac{1}{2}$ -foot iron pipe culvert, 10 feet below the tracks and 20 feet from the rail, and consists of a cross on the highest point on the east end of the pipe.

L.—Is at *Marlow, Ind. T.*, on the east side of the First National Bank Building, 6 inches from the south end of the water table to double window, and consists of a square marked by lines 1 inch on a side.

Marlow Long. Sta.—Is at *Marlow, Ind. T.*, on the northeast corner of the public school lot at the southwest corner of Fifth street and Brummett avenue, on a concrete pier (red sandstone and Portland cement), used by E. Smith, in 1899, for longitude observations. The longitude station is marked by a bronze station mark similar to that described in note 31, p. 583. The bench mark is at the cross marking the station.

1331 Marlow.—Is the bench mark of the United States Geological Survey, $2\frac{1}{2}$ miles north of *Marlow, Ind. T.*, at the section corner between T. 2 N., R. 7 W., secs. 5 and 4, and T. 3 N., R. 7 W., secs. 32 and 33, 50 feet west of the track, and consists of an iron post 12 inches out of the ground, stamped 1331.

M.—Is $4\frac{1}{2}$ miles north of *Marlow, Ind. T.*, in the coping stone to the east side of an arched stone culvert, 6 inches from the south and east edges of the stone. (See note 7, p. 581.)

N.—Is at *Rush Springs, Ind. T.*, in the northwest stone pier of the center set of supports to the railway water tank. (See note 5, p. 580.)

1349 Rush Springs.—Is a bench mark of the U. S. Geological Survey 1 mile north of township line, at *Rush Springs, Ind. T.*, on the left side of the main entrance to the Masonic building, and consists of a bronze tablet in the middle of the northeast face of the second stone above the sidewalk, stamped 1349.

1292 Rush Springs.—Is a bench mark of the United States Geological Survey, 6 miles north of *Rush Springs, Ind. T.*, on the first standard parallel north, between T. 4 N., R. 7 W., sec. 4, and T. 5 N., R. 7 W., sec. 33, 37.9 feet west of the track, 15.3 feet south of the twentieth telegraph pole north of milepole 451, and consists of an iron post 10 inches above ground, stamped 1292.

T. B. M. 95.—Is at siding No. 2, 6 miles south of *Ninnekah, Ind. T.*, on the top of a section of iron rail used as a marker for mile pole 449.

O.—Is 4 miles south of *Ninnekah, Ind. T.*, on the coping stone to a culvert, $4\frac{1}{2}$ poles north of milepole 447 $\frac{1}{2}$, on the west side of the track, 4 inches from west and 28 inches from the south edges of the stone. (See note 5, p. 580.)

P.—Is one-half mile north of *Ninnekah, Ind. T.*, on the west side of the south abutment of the bridge over Little Washita River, in the bridge seat, 6 inches from the north and 30 inches from the west edge of the stone. (See note 7, p. 581.)

1084 Chickasha.—Is a bench mark of the United States Geological Survey, $1\frac{3}{4}$ miles south of *Chickasha, Ind. T.*, at the quarter-section corner between T. 6 N., R. 7 W., sec. 3, and T. 7 N., R. 7 W., sec. 34, about 180 feet west of the track, and consists of an iron post 8 inches out of the ground, stamped 1084.

1091 Chickasha.—Is a bench mark of the United States Geological Survey in *Chickasha, Ind. T.*, at the northeast corner of a brick building owned by J. C. Griggers, situated at the corner of Chickasha avenue and Second street, and consists of a bronze tablet set in the middle of the east face of the foundation stone, and stamped 1091.

Q.—Is at *Chickasha, Ind. T.*, in the top step of the eastern entrance to the First National Bank building, about 12 inches from the north end of the step and 5 inches from the iron grating. (See note 7, p. 581.)

R.—Is three-fourths of a mile north of *Chickasha, Ind. T.*, on the southwest corner of the north abutment of the Chicago, Rock Island and Pacific Railway bridge No. 3164, 4 inches from the west and 12 inches from the south edge of the stone. (See note 5, p. 580.)

1105 Boundary.—Is a bench mark of the United States Geological Survey, about 4 miles west of *Chickasha, Ind. T.*, and about 200 feet south of the Anadarka branch of the Chicago, Rock Island and Pacific Railway, and consists of an iron post marked 1105 ft., and is milepost No. 73 on the boundary from the Red River.

S.—Is $2\frac{1}{2}$ miles north of *Chickasha, Ind. T.*, on the northeast corner of the south abutment to the Chicago, Rock Island and Pacific Railway bridge over Washita River, about 6 inches from the north and east edges of the stone. (See note 5, p. 580.)

T. B. M. 114.—Is 4 miles north of *Chickasha, Ind. T.*, and consists of an iron rail on end, used as a marker for milepole 432.

Carson Δ .—Is about 3 miles south of *Minco* in the *Chickasaw Nation, Ind. T.*, in sec. 8, T. 9 N., R. 7 W., on the property of Kit Carson of Minco, on old trail or road from Minco to Chickasha, on the highest point of a bold ridge three-fourths of a mile west of the Chicago, Rock Island and Pacific Railway. The bench mark is 1 decimeter west of the Δ , between the U. and the S. (See note 22, p. 582.)

1284 Minco.—Is a bench mark of the United States Geological Survey, $1\frac{1}{2}$ miles south of *Minco, Ind. T.*, at the quarter-section corner between T. 9 N., R. 7 W., sec. 4, and T. 10 N., R. 7 W., sec. 33, about 150 feet east of the track, and consists of an iron post stamped 1284.

T.—Is at *Minco, Ind. T.*, on the southeast corner of the northeast pier supporting the central part of the railway water tank, about 3 inches from either edge. (See note 5, p. 580.)

U.—Is at *Minco, Ind. T.*, on the water table to the double window on the north side of the Bank of Minco, about 4 inches from the west end. (See note 5, p. 580.)

1266.5 Union.—Is a bench mark of the United States Geological Survey, about 2 miles south of *Union, Canadian County, Okla.*, about 1 000 feet north of the Chicago, Rock Island and Pacific Railway bridge crossing the Canadian River, in line with the telegraph poles on the west side of the track, close to the third pole north of milepole 414, and consists of an iron post, 15 inches out of the ground, marked 1266.5 ft.

A.—Is at *Union, Canadian County, Okla.*, in an angle of the fence, about 1 000 feet north of the station, 70 feet east of the track. (See note 12, p. 581.)

Elreno E. B. Δ .—Is at the triangulation station Elreno East Base, 5 miles south of *Elreno, Canadian County, Okla.*, on the land of Mr. G. L. Newman, 1.2 kilometers east of the track of the Chicago, Rock Island and Pacific Railway. (See note 31, p. 583.)

Elreno W. B. Δ .—Is at the triangulation station Elreno West Base, about 7 miles southwest of *Elreno, Canadian County, Okla.*, on the land of Mr. J. T. Seawell. (See note 31, p. 583.)

T. B. M. 142.—Is at *Elreno, Canadian County, Okla.*, across the tracks from and in line with the south end of the railroad station, and consists of the top of a section of iron rail in the ground.

B.—Is at *Elreno, Canadian County, Okla.*, on the north side of the Minneapolis Threshing Machine Company building, which is close to the railroad track and one-fourth of a mile north of the Chicago, Rock Island, and Pacific Railway station, on west side of doorstep to office entrance. (See note 5, p. 580.)

1357 Elreno.—Is a bench mark of the United States Geological Survey, at *Elreno, Canadian County, Okla.*, on the northeast face of the First National Bank, on the right-hand side of the entrance, on the second stone above the sidewalk, and consists of a bronze plate marked 1357 ft.

City Elreno.—Is a bench mark of the city engineers in *Elreno, Canadian County, Okla.*, on Bickford avenue between Hays and Woodson streets, on a building with a galvanized iron front, painted and sanded to represent white stone, facing east, with a drug store occupying the north room (1902), and consists of the center of an iron step in the stairway.

1327 Reno Junction.—Is a bench mark of the United States Geological Survey at *Reno Junction, Canadian County, Okla.*, at the crossing of the Choctaw, Oklahoma and Gulf Railway, and the Chicago, Rock Island and Pacific Railway, 54 feet south of the former, 44 feet east of the latter, and consists of an iron post marked 1327 feet.

C.—Is at *Darlington, Canadian County, Okla.*, in the southeast corner of the northeast pier supporting the central part of the railway water tank. (See note 5, p. 580.)

T. B. M. 148.—Is one-half mile north of *Caddo, Canadian County, Okla.*, on the top of a section of iron rail in the ground used as a marker for mile pole 396.

D.—Is at *Okarche, Canadian County, Okla.*, 6 telegraph poles north of the station and $3\frac{1}{2}$ poles south of mile pole 388, in an angle of the fence, 30 feet west from and 6 feet above the tracks. (See note 12, p. 581.)

E.—Is at *Kingfisher, Kingfisher County, Okla.*, on the northeast corner of the southeast pier supporting the central part of the water tank. (See note 5, p. 580.)

F.—Is at *Kingfisher, Kingfisher County, Okla.*, on south corner of iron shoe plate upon concrete, on which rests south iron column supporting standpipe to city water plant, and consists of a square bounded by edges of plate and two chisel marks.

G.—Is at *Kingfisher, Kingfisher County, Okla.*, on the east side of the Kingfisher National Bank, on the window sill of the third window from the corner, eight inches from the south edge of the sill. (See note 5, p. 580.)

H.—Is at *Dover, Kingfisher County, Okla.*, on the southwest corner of the base stone to the northwest pier supporting the outer part of the railway water tank. (See note 5, p. 580.)

I.—Is at *Hennessey, Kingfisher County, Okla.*, on the northeast corner of the southeast pier supporting the central part of the railway water tank. (See note 5, p. 580.)

J.—Is in *Hennessey, Kingfisher County, Okla.*, on S. N. Bree's (1901) brick building near the corner of Main street and Oklahoma avenue, near the base of the iron column at the left of the entrance, and consists of the center of a square formed by the edges of the base plate and two chisel marks.

K.—Is at *Bison, Garfield County, Okla.*, between the sixth and seventh poles north of the station, 10 feet from the seventh pole and one pole south of the switch stand. (See note 12, p. 581.)

L.—Is at *Waukomis, Garfield County, Okla.*, in the large brick public school building on the west side, in the northwest corner pilaster, 9 inches from the corner and 4 feet above the ground, in the center of a brick. (See note 8, p. 581.)

Waukomis Δ .—Is one-half mile northwest of *Waukomis, Garfield County, Okla.*, sec. 23, T. 21 N., R. 7 W., on the property of J. Crick, about 100 meters northwest of his dwelling. The bench mark is 5 inches west of the Δ . (See note 22, p. 582.)

Waukomis E.—Is one-half mile northwest of *Waukomis, Garfield County, Okla.*, 210.050 meters east of Waukomis Δ , in the northeast corner of J. Crick's garden near the public road. The bench mark is the flat part of the concrete near the projecting point of the spike used as a reference mark for Waukomis Δ .

M.—Is at *Enid, Garfield County, Okla.*, about 1 600 feet north of the Chicago, Rock Island and Pacific Railway station, in the northeast corner of the south concrete abutment to bridge (1902), 9 inches from the east and north edges of the concrete. (See note 35, p. 583.)

N.—Is at *Enid, Garfield County, Okla.*, at the eastern entrance to the First National Bank on Broadway street, on the north end of the lowest step, about 4 inches from the north column to the arch of the doorway and 5 inches above the sidewalk. (See note 5, p. 580.)

O.—Is at *North Enid, Garfield County, Okla.*, on the southeast corner of the foundation stone of the east one of the outer supports on the south side of the railway water tank. (See note 5, p. 580.)

Enid Δ .—Is about 2 miles north and $2\frac{1}{2}$ miles east of *North Enid, Garfield County, Okla.*, in sec. 22, T. 23 N., R. 6 W., on a prominent ridge, in the line of fence on south side of the road (the northern boundary of property of Mr. Smith), about 76 meters from corner of sections 14, 15, 22, and 23. The bench mark is 5 inches north of the Δ , and is marked by the head of a nail driven flush with the bottom of the square. (See note 22, p. 582.)

P.—Is at *Kremlin, Garfield County, Okla.*, 12 feet south of the sixth telegraph pole north of the station. (See note 12, p. 581.)

Q.—Is at *Pond Creek, Grant County, Okla.*, on the stone doorstep of the schoolhouse (1895), 4 inches from the eastern side of the arch to the south doorway and 2 inches from the edge of the stone. (See note 5, p. 580.)

R.—Is one-half mile south of *Jefferson, Grant County, Okla.*, on the northwest corner of the southwest foundation stone supporting the column to the central part of the railway water tank. (See note 5, p. 580.)

S.—Is at *Medford, Grant County, Okla.*, in the southeast angle formed by the Chicago, Rock Island and Pacific Railway and the Atchison, Topeka and Santa Fe Railway, about 60 feet from each track. (See note 12, p. 581.)

T.—Is at *Medford, Grant County, Okla.*, in the east face of a brick school building, 4 feet above the ground, near the center of the third brick from the northeast corner. (See note 35, p. 583.)

U.—Is at *Medford, Grant County, Okla.*, on the southwest corner of the east one of the outer supports on the north side of the Atchison, Topeka and Santa Fe Railway water tank. (See note 5, p. 580.)

V.—Is at *Clyde, Grant County, Okla.*, 10 feet west of the third telegraph pole east of and across the tracks from the Atchison, Topeka and Santa Fe Railway station. (See note 12, p. 581.)

W.—Is at *Wakita, Grant County, Okla.*, on the south face of the east column of the Masonic Hall, on Main street, in the middle brick in the seventeenth tier from the sidewalk. (See note 35, p. 583.)

X.—Is at *Gibbon, Grant County, Okla.*, 2 poles east of and across the tracks from the station sign, 10 feet west of the second telegraph pole west of mile pole 305. (See note 12, p. 581.)

Y.—Is at *Manchester, Grant County, Okla.*, in the north face of the Odd Fellows Hall, in the center of the brick column at the northeast corner, in fifteenth tier above stone foundation. (See note 35, p. 583.)

G₈.—Is at *Spring, Harper County, Kans.*, six feet north of the telegraph pole at the station sign, on the right of way of the Atchison, Topeka & Santa Fe Railway. (See note 12, p. 581.)

F₈.—Is at *Anthony, Harper County, Kans.* (See p. 774.)

Anthony S. E. B. Δ .—Is $1\frac{1}{8}$ miles north of *Anthony, Harper County, Kans.* (See p. 774.)

DESCRIPTIONS OF PERMANENT BENCH MARKS FROM BOWIE, TEX., TO SHREVEPORT, LA.

1124 Gainv.—Is at *Bowie, Montague County, Tex.* (See p. 774.)

B.—Is at *Bowie, Montague County, Tex.* (See p. 774.)

H.—Is at *Fruitland, Montague County, Tex.*, in the west side of the stone chimney on the south side of the house owned by W. H. Scarborough; about 5 feet from the ground and 6 inches from edge of the chimney. (See note 35, p. 583.)

I.—Is at *Sunset, Montague County, Tex.*, in the middle column of store owned by Dr. H. F. Schoolfeld, in the center of the fourth stone above the sidewalk. (See note 35, p. 583.)

J.—Is at *Alvord, Wise County, Tex.*, in the stone column at the east side of the Masonic Building (occupied by bank), in the center of the third block above the sidewalk. (See note 35, p. 583.)

K.—Is at *Cowen, Wise County, Tex.*, 40 feet from the track, on the east side and in line with the station sign, and 3 feet from the right-of-way fence. (See note 36, p. 584.)

L.—Is at *Decatur, Wise County, Tex.*, at the northwest corner of the public school building (1883), about 4 feet above the ground, in the center of the north side of the second sandstone block. (See note 35, p. 583.)

M.—Is at *Herman, Wise County, Tex.*, about 3 feet inside of the right-of-way fence, and 50 feet east of the railroad track and in line with the station sign. (See note 36, p. 584.)

N.—Is at *Rhome, Wise County, Tex.*, in the north corner of the railroad lot (used by pumping houses and water tank), 2 feet from west fence and 3 feet from east fence, near the fourth telegraph pole north of railroad station. (See note 36, p. 584.)

O.—Is at *Avondale, Tarrant County, Tex.*, 6 feet south of the third telegraph pole south of and across the tracks from railroad station, and 30 feet from the tracks, in line with the telegraph poles. (See note 36, p. 584.)

P.—Is $1\frac{1}{4}$ miles north of *Saginaw, Tarrant County, Tex.*, on an arched concrete abutment of the Chicago, Rock Island and Pacific Railway, 4 telegraph poles north of mile pole 10 of Fort Worth and Denver City Railway, on the east side of the abutment, in the northeast corner, 9 inches from either edge. (See note 35, p. 583.)

Q.—Is about $1\frac{1}{2}$ miles north of Trinity River crossing at *Fort Worth, Tarrant County, Tex.*, in the northwest corner of the west side of an arched concrete culvert at mile pole 608 (Chicago, Rock Island and Pacific Railway track) 8 inches from the north and 4 inches from the west edge. (See note 35, p. 583.)

R.—Is about 3 miles north of Union Station at *Fort Worth, Tex.*, on a large stone pier (the first from the north bank of Trinity River) of the Chicago, Rock Island and Pacific Railway bridge No. 3306, on the northwest corner of the west side, 8 inches from either edge. (See note 5, p. 580.)

S.—Is about 2 miles north of Union Station at *Fort Worth, Tarrant County, Tex.*, on the south end of the west pier supporting the Missouri, Kansas and Texas track (over the Chicago, Rock Island and Pacific Railway track) at the north end of the freight yards of the Chicago, Rock Island and Pacific Railway, on the lowest step at the southeast corner, 6 inches from either edge. (See note 5, p. 580.)

T.—Is a mile north of Union Station at *Fort Worth, Tarrant County, Tex.*, on the northwest corner of the large block forming the lowest step to the west side of the south abutment supporting the Fort Worth and Denver City Railway track (over the Chicago, Rock Island and Pacific Railway track), 4 inches from the adjacent edges of the stone and $3\frac{1}{2}$ feet from the ground. (See note 5, p. 580.)

U.—Is at *Fort Worth, Tarrant County, Tex.*, at the west side of the south abutment where the railroad tracks pass over the Fort Worth and Dallas Electric Line tracks, on the second step from the top, 6 inches from the adjacent edges of stone. (See note 5, p. 580.)

Hydrant 1.—Is a city bench mark at *Fort Worth, Tarrant County, Tex.*, and is a cross made by a chisel mark on top of the old water hydrant near the crossing of the main tracks of the Texas and Pacific and the Missouri, Kansas and Texas Railways, 9 paces south of the Texas and Pacific track, 9 paces west of the Missouri, Kansas and Texas track, 7 paces east of the Houston and Texas Central track, and 5 paces west of Santa Fe Railroad track. On account of "filling in" only a few inches of the hydrant projects above the ground.

Hydrant 2.—Is a city bench mark at *Fort Worth, Tarrant County, Tex.*, and is the top of the water hydrant at the northeast corner of the city hall, on Throckmorton street.

V.—Is at *Fort Worth, Tarrant County, Tex.*, at the northeast corner of the city fire department building (central station) on Throckmorton street, between Eighth and Ninth, near the center of the east face of a block of stone in the fourth tier and about 4 feet from the ground, 15 inches from the corner of the building, 13 inches from a window. (See note 35, p. 583.)

W.—Is at *Handley, Tarrant County, Tex.*, in the center of the middle pilaster on the northeast side of the power house of the Northern Texas Traction Company, about 4 feet from the ground. (See note 35, p. 583.)

X.—Is at *Arlington, Tarrant County, Tex.*, at the east side of the north face of the Citizens' National Bank building, in the middle brick of the eastern brick column, about $4\frac{1}{2}$ feet above the ground. (See note 35, p. 583.)

Y.—Is at *Grand Prairie, Dallas County, Tex.*, in line with the telegraph poles, 15 feet west of the first pole west of mile pole 234, about 200 feet west of and across the tracks from the station. (See note 36, p. 584.)

Z.—Is at *Eagle Ford, Dallas County, Tex.*, in an angle formed by a wagon road and the railroad right-of-way fence, 32 paces south of the tracks and opposite the station. (See note 36, p. 584.)

A₂.—Is at *Dallas, Dallas County, Tex.*, in the west corner of the buttress to the county court-house, in the second tier of stone about $2\frac{1}{2}$ feet from the ground. The bolt points almost to the intersection of Houston and Main streets. (See note 35, p. 583.)

B₂.—Is at *Dallas, Dallas County, Tex.*, at the east side of the doorstep to the north entrance, on Main street, of the United States custom-house and post-office building, 8 inches from the eastern column of the doorway, 8 inches from the wooden door frame, and 13 inches from the outer edge of the stone doorstep. (See note 35, p. 83.)

C₂.—Is at *Dallas, Dallas County, Tex.*, at the southeast corner of the city hall, corner of Commerce and Akard streets, on the side facing the Oriental Hotel, 4 feet above the sidewalk, in the third tier, near the center of a stone. (See note 35, p. 583.)

D₂.—Is at *Fisher, Dallas County, Tex.*, just within the right-of-way fence, 14 paces south of the tracks and about 350 feet west of the station sign. (See note 36, p. 584.)

E₂.—Is at *Garland, Dallas County, Tex.*, in the stone window sill of the western window on the north side of the Citizens' Bank, about 2 inches from the edge of the sill and 4 inches from the west frame of the window, and about 4 feet from the ground. (See note 5, p. 580.)

F₂.—Is at *Rowlett, Dallas County, Tex.*, in the angle formed by the right-of-way fence and the fence at a road crossing about 700 feet east of the station, 16 paces north of the center of the railroad track, 4 paces west from the crossing, and between the fourth and the fifth telegraph poles east of the station. (See note 36, p. 584.)

G₂.—Is at *Rockwall, Rockwall County, Tex.*, at the southwest corner of the county court-house, in the south face, 4 feet above the ground, in the fourth tier from the foundation and about midway between the corner of the building and a window. (See note 35, p. 583.)

H₂.—Is at *Fate, Rockwall County, Tex.*, in the middle brick column of the double building owned by Low & Sawyer, in the front facing south and about 4 feet from ground. (See note 35, p. 583.)

I₂.—Is at *Royse, Rockwall County, Tex.*, in the center of a large stone block at the left of the entrance to the Royse City Bank, on the west side, about 16 inches above sidewalk. (See note 35, p. 583.)

J₂.—Is about 200 feet east of the railroad station at *Caddo Mills, Hunt County, Tex.*, 8 feet west of the second telegraph pole east of the station, about 20 feet north of the track, in line with the telegraph poles. (See note 36, p. 584.)

K₂.—Is at *Greenville, Hunt County, Tex.*, on the Central schoolhouse on Weslie street, on the part of the building jutting out to form the main entrance, in a stone in the fifth tier above the ground, the course of stone which runs entirely around the building, about 4½ feet from the north side of the main entrance, and 10 inches from the edge of the stone. (See note 35, p. 583.)

L₂.—Is at *Greenville, Hunt County, Tex.*, in the column to the right of the corner entrance to the building known as Beckham Hotel Annex, on the side facing Lee street, in the center of the fourth tier of stone, and about 4 feet from the ground. (See note 35, p. 583.)

M₂.—Is at *Greenville, Hunt County, Tex.*, in the top step to the main (Lee street) entrance to the county court-house, near the base of the right-hand columns of two false arches forming part of the entrance, 5 inches from adjacent corners of the columns. (See note 35, p. 583.)

N₂.—Is 5 miles east of *Greenville, Hunt County, Tex.*, 6 feet west of the telegraph pole south of and directly opposite the switch stand at the east end of the *new* siding (to be called *Husband*), near mile pole 719, on a T-shaped section of iron rail, 42 inches long, projecting about 10 inches above the ground, and is marked by a large cross made with chisel where the base and stem of the T join, and stamped—

U × S
B
M

O₂.—Is at *Campbell, Hunt County, Tex.*, 9 paces south of the main track, 10 feet east of the railroad-crossing sign about 175 feet east of the station. The side of the top of the post has a piece broken off. (See note 36, p. 584.)

P₂.—Is at *Cumby, Hopkins County, Tex.*, in the First National Bank building; on the west side, near the southwest corner, about 4 feet from the ground, 5 bricks from the corner, and about midway between the corner and the window. (See note 35, p. 583.)

Q₂.—Is at *Brashear, Hopkins County, Tex.*, directly opposite the station, 23 paces south of the main track, 5 feet from the right-of-way fence and 38 paces west from the corner of this fence near the road crossing. (See note 36, p. 584.)

R₂.—Is at *Sulphur Springs, Hopkins County, Tex.*, to the right of entrance, at Church and Jefferson streets, of the county court-house, in the red sandstone cap to a small basement window facing Church street, 6 inches from the top and left side of the window cap. (See note 35, p. 583.)

S₂.—Is at *Como, Hopkins County, Tex.*, 10 paces north of the track, in a triangle formed by a telegraph pole and two guys thereto, about 100 feet east of and across tracks from the station. (See note 36, p. 584.)

T₂.—Is about 150 feet west of the station at *Pickton, Hopkins County, Tex.*, 4 paces west of the first telegraph pole west of the station, 9 paces north of the track, in line with the telegraph poles. (See note 36, p. 584.)

U₂.—Is at *Winnsboro, Wood County, Tex.*, in the north face of the First National Bank building, in the second brick from the corner just to left of entrance and about 4 feet above the ground. (See note 35, p. 583.)

V₂.—Is at *Scroggins, Wood County, Tex.*, about 7 feet within the right-of-way fence, 12 paces south of and at right angles to the track from a point 45 feet east of the east end of wooden bridge, 6 telegraph poles east of station sign. (See note 36, p. 584.)

W₂.—Is about 250 feet from the station at *Leesburg, Camp County, Tex.*, 9 feet south of the second telegraph pole east of and across the tracks from the station. (See note 36, p. 584.)

X₂.—Is one-fourth mile west of the station at *Pittsburg, Camp County, Tex.*, on a concrete arched culvert on Missouri, Kansas and Texas Railway, one telegraph pole east of mile pole 786, and about 60 feet east of water tank, in the top of the coping to the north side, 6 inches from the north, and 8 inches from the east edge. (See note 35, p. 583.)

Y₂.—At *Pittsburg, Camp County, Tex.*, in the west face of the Carnegie Library Building, about 4 feet from the ground, in the middle brick of the second course of brick above the concrete forming the base of the pilaster at the right of the small entrance on the west side of the building. (See note 35, p. 583.)

Z₂.—Is at *Cason, Cass County, Tex.*, 15 paces south of the track, in an angle of the fence on the west side of the road crossing, 7 telegraph poles west of station and 5 feet from the south and east fences. (See note 36, p. 584.)

A₂.—Is at *Daingerfield, Morris County, Tex.*, in the west side of the county court-house, in the center of the fourth brick from the northwest corner of the building, about 4 feet from the ground and midway between the window and the northwest corner. (See note 35, p. 583.)

B₂.—Is at *Hughes*, also called *Hughes Spring, Cass County, Tex.*, in the west face of a brick building owned by Mr. T. B. Keaster, in the new part of building, in the double column where the old and the new buildings join, 11 paces from the northwest

corner of the building and in the twenty-first tier of brick above the concrete sidewalk. (See note 35, p. 583.)

C₂.—Is at *Avinger, Cass County, Tex.*, 26 paces north of the old track, 19 paces west of the old railroad station, 2 telegraph poles east of mile pole 817, 12 paces north of the public road paralleling the railroad. (See note 36, p. 584.)

D₂.—Is about 1 mile east of *Avinger, Cass County, Tex.*, and 2½ telegraph poles west of mile pole 818, on south side of an arched concrete culvert under the new grade, in center of the top of the coping, about 13 inches from the west end. (See note 35, p. 583.)

E₂.—Is at *Lasater, Marion County, Tex.*, 9 paces north of the old abandoned grade, 35 paces north of the new track, 10 feet east of second telegraph pole (old line), west of platform used as station, 44 paces west of railroad-crossing sign at road crossing. (See note 36, p. 584.)

F₂.—Is at *Kellyville, Marion County, Tex.*, 30 feet west of and across the track from the switch stand at the west end of the siding, between the third and fourth telegraph poles east of mile pole 830, 14 paces north of the track, in an angle formed by the right-of-way fence and the fence crossing the railway. (See note 36, p. 584.)

G₂.—Is at *Jefferson, Marion County, Tex.*, 7 feet north of the telegraph pole just opposite the Missouri, Kansas and Texas station, almost in line with the east end of the building and 16 paces north of the track. (See note 36, p. 584.)

I₂.—Is at *Norwood, Harrison County, Tex.*, and directly across the track from the second telegraph pole east of mile pole 843, and 2½ poles west of the mail-catch stand, 30 paces north of the track and about 5 feet inside of the right-of-way fence. (See note 36, p. 584.)

J₂.—Is about 600 feet east of and across the tracks from the station at *Karnack, Harrison County, Tex.*, 12 paces east of and 18 paces south of the fourth telegraph pole west of mile pole 848, 24 paces south of the track and 10 paces north of the right-of-way fence. (See note 36, p. 584.)

K₂.—Is about 230 feet east of the station at *Blocker, Harrison County, Tex.*, 4 paces south of the second telegraph pole east of the station and 12 paces south of the track. The top of a corner of the post is broken off. (See note 36, p. 584.)

L₂.—Is at *Waskom, Harrison County, Tex.*, about 250 feet west of the station (Missouri, Kansas and Texas) and 8 paces south of track, 6 feet southwest of third telegraph pole west of station. (See note 36, p. 584.)

C.—Is at *Greenwood, Caddo Parish, La.*, in the top of a concrete abutment on the Texas and Pacific Railroad, 600 feet east of Texas and Pacific station, in south side of west abutment, 30 inches from the east and 20 inches from the south edge of the concrete. The bolt is five-eighths inch in diameter and projects about one-half inch above the surface of the abutment. (See note 35, p. 583.)

D.—Is at *Nichols, Caddo Parish, La.*, 11 paces south of the track, 4 paces south of the second telegraph pole west of mile pole 874, two poles east of and across the tracks from the switch stand at the east end of the siding, and is the bottom of a square hole cut in the top of a rough limestone post marked U S.

E.—Is at *Jewella, Caddo Parish, La.*, 12 paces north of the track, in an angle formed by the right-of-way fence and the fence crossing the tracks about 250 feet east of station. Half of the top of the post is rough. (See note 36, p. 584.)

F.—Is at *Shreveport, Caddo Parish, La.*, about two blocks east of central station, on north side of west abutment to steel bridge over Marshall street on the main track of the Vicksburg, Shreveport and Pacific Railway, and consists of a square cut, lettered U ⊕ S, near the center of the top of the fifth step from the bottom and the seventh below the coping, the step to which is fastened the iron brace to the iron railing running down the side of the steps to the abutment. The abutments are of brick excepting the bridge seats and side steps, which are of sandstone.

G.—Is at *Shreveport, Caddo Parish, La.*, in the east face of the parish court-house, near the center of a large block of stone in the fifth tier above the ground, the second stone from the southeast corner of the building; 28 inches from the southeast corner and about 4 feet from the ground. (See note 35, p. 583.)

H.—Is at *Shreveport, Caddo Parish, La.*, on the Vicksburg, Shreveport and Pacific Railway bridge over Red River, on the south side of the first stone pier from the west bank, upon which rests the east end of the first span of steel trestle work, and to which the United States Engineers river gauge is attached, in the southwest quadrant of the semicircular top-stone, 8 inches from the edge and projecting one-half an inch above the stone; 18 inches from where the pier lantern hook is attached and 43 inches from the iron base plate to the trestle. (See note 35, p. 583.)

I.—Is at *Shreveport, Caddo Parish, La.*, on the south side of the east abutment to the Vicksburg, Shreveport and Pacific Railway bridge over Red River, on the granite bridge seat, 5 inches from the south and 6 inches from the west edge of the stone, and is about 4 feet below the level of the track. (See note 5, p. 580.)

P. B. M. 45.—Is near *Shreveport, Caddo Parish, La.* (See p. 670, App. 8, Report for 1899.)

P. B. M. 46.—Is at *Bodcau, Bossier Parish, La.* (See p. 670, App. 8, Report for 1899.)

DESCRIPTIONS OF PERMANENT BENCH MARKS FROM FORT WORTH TO COMANCHE,
TEX., 1902.

T.—Is at *Fort Worth, Tarrant County, Tex.* (See p. 782.)

U.—Is at *Fort Worth, Tarrant County, Tex.* (See p. 783.)

M₂.—Is at *Fort Worth, Tarrant County, Tex.*, on top of the stone base to one of the iron supports to the viaduct over tracks, one-fourth mile west of Texas and Pacific Railway station. The mark is on the base under the second support east in second row north of main track, at southeast corner, 3½ inches from south and east edges. (See note 5, p. 580.)

N₂.—Is a mile east of *Belt Junction, Yarrant County, Tex.*, 15 paces from the eighth telegraph pole west of milepost 3 on Fort Worth and Rio Grande Railroad, on the southwest corner of the west abutment of a culvert. (See note 5, p. 580.)

O₂.—Is at *Primrose, Tarrant County, Tex.*, 5 poles west of the station sign, 6 telegraph poles east of mile pole 12, in an angle of the right-of-way fence on the Fort Worth and Rio Grande Railroad, 16 paces north of the track. (See note 36, p. 584.)

P₂.—Is at *Virgile, Tarrant County, Tex.*, 10 feet north of the third pole west of the station sign, in an angle of the right-of-way fence on the Fort Worth and Rio Grande Railway, 15 paces north of the track. (See note 36, p. 584.)

Q₃.—Is in *Parker County, Tex.*, just across the county line from *Cresson, Tarrant County, Tex.*, 50 paces east of the station, 5 paces east of mile pole 25, and 20 paces north of the track of the Fort Worth and Rio Grande Railroad. (See note 36, p. 584.)

R₃.—Is at *Waples, Hood County, Tex.*, 3 paces north of the first telegraph pole east of mile pole 34, and 15 paces north of the tracks on the Fort Worth and Rio Grande Railway. (See note 36, p. 584.)

S₃.—Is at *Granbury, Hood County, Tex.*, on the east side of the Hood County courthouse, 10 feet north of the east door, in the stone water table, 4½ feet from the ground. (See note 35, p. 583.)

Comanche Δ.—Is at the triangulation station Comanche, southwest of *Granbury, Hood County, Tex.*, on what is known as "Comanche Peak," in the part which is open ground and near the southern edge. The triangulation station was placed over the same point used by the Geological Survey in 1888. The station mark of the Geological Survey, a stone about 15 inches in diameter and 3 inches thick, was removed and in its place was put a galvanized pipe 2 inches in diameter and 18 inches long. The pipe was filled with concrete, level with the surface of the ground, and the top of the pipe being covered one-half an inch with the cement. A 60-penny wire nail was set in the upper end of the pipe.

Comanche Reference Mark.—Is about 4½ miles southwest of *Granbury, Hood County, Tex.*, on "Comanche Peak," at the edge of the timber to the southwest of the open ground, 49.306 meters from the triangulation station. It is marked by a terracotta pipe, 2 feet long, covered with cement one-half inch thick. A 60-penny wire nail was set in the cement to mark the station, and the top of the nail is the bench mark.

DESCRIPTION OF PERMANENT BENCH MARKS BETWEEN FORT WORTH AND TEMPLE, TEX.

T.—Is at *Fort Worth, Tarrant County, Tex.* (See p. 783.)

U.—Is at *Fort Worth, Tarrant County, Tex.* (See p. 783.)

T₃.—Is one-half mile north of the siding at *Bethel, Tarrant County, Tex.*, 50 feet west of the railroad track, in the right of way of the Missouri, Kansas and Texas main line, 3 feet east of telegraph pole opposite mile pole 764. (See note 40, p. 584.)

U₃.—Is at *Burleson, Johnson County, Tex.*, in the brick building used as the post-office, in the east front, 4½ feet above the sidewalk, in a panel north of the northernmost window. (See note 10, p. 581.)

V₃.—Is at the siding at *Egan, Johnson County, Tex.*, in the Missouri, Kansas and Texas Railway right of way at the left and 7 feet below the track, 50 feet northeast of the south switch and 3 feet from the telegraph pole, the second one south of the station sign. (See note 40, p. 584.) The railway company reported in May, 1903, that on account of grading necessary for the construction of new tracks the bench mark was covered 6 feet. The following bench mark, "R. R.," was then established.

R. R.—Is at *Egan, Johnson County, Tex.*, and consists of a piece of rail placed in the ground in front of the ticket window, established by the Missouri, Kansas and Texas Railway engineers. The end of the ball of the top of the rail is 10.00 feet above bench mark V₃.

W₃.—Is at *Alvarado, Johnson County, Tex.*, one-fourth mile south of the station, in north stone abutment of the Missouri, Kansas and Texas Railway iron bridge, on the

lowest step west of the track and $3\frac{1}{2}$ feet below its level. It is 8 inches from the south and 10 inches from the west edge of the stone. (See note 5, p. 580.)

X₃.—Is at *Conley, Johnson County, Tex.*, 25 feet east of the Missouri, Kansas and Texas Railway track, in the right of way near the first telegraph post north of the south switch. (See note 40, p. 584.)

Y₃.—Is at *Grand View, Johnson County, Tex.*, in the west wall near the northwest corner of the brick building occupied by the post-office, on the south side of Main street and across from the Missouri, Kansas and Texas tracks, about 300 yards south of the depot; 4 feet above the sidewalk, and 10 inches from the corner of the building. (See note 16, p. 581.)

Z₃.—Is at *Itasca, Johnson County, Tex.*, in the brick building leased by the Itasca National Bank, in the west front, north of large window, 4 feet from the walk. The building is the second one from Maine street and on the east side of the street. (See note 16, p. 581.)

A₄.—Is at *Schofield, Hill County, Tex.*, 3 feet east of the fourth telephone pole south of the station sign, in the right of way, 50 feet west of the Missouri, Kansas and Texas track, and 1 foot from the right of way fence. (See note 40, p. 584.)

B₄.—Is at *Hillsboro, Hill County, Tex.*, in white stone in the northwest corner of the Hill County court-house, in the cornice about 5 feet from the ground and $1\frac{1}{2}$ feet north of the water spout. It faces west, being set in a recess of the corner. (See note 13, p. 581.)

C₄.—Is near *Abbott, Hill County, Tex.*, $1\frac{1}{2}$ miles north of the station, 35 feet east of the Missouri, Kansas and Texas Railway track and 10 feet from the right of way fence, 6 feet northwest of telegraph pole, fifth south of bridge No. 672, near the opening of the first railway cut north of Abbott. (See note 40, p. 584.)

D₄.—Is at *West, McLennan County, Tex.*, in the brick building on Main street, on the east side of the street and faces the Missouri, Kansas and Texas track. It is south of the south window of the third store north of Boone street. The building is occupied by a grocery, and is two doors north of the West National Bank. (See note 16, p. 581.)

E₄.—Is at *Elmott, McLennan County, Tex.*, in the right of way 40 feet east of the Missouri, Kansas and Texas track, in angle of the right of way fence, and 2 feet west of the telegraph pole, the second south of the depot, directly across the track from the cattle-loading pen, opposite a small brown house on the road leading south from the station. (See note 40, p. 584.)

F₄.—Is at *Waco, McLennan County, Tex.*, in a brick building on the southeast corner of South Fifth and Jackson streets, occupied by McCleary's feed store. The bolt is $4\frac{1}{2}$ feet above the ground and $1\frac{1}{2}$ feet from the southernmost window toward the Missouri, Kansas and Texas tracks. (See note 13, p. 581.)

Hydrant 1.—Is at *Waco, McLennan County, Tex.*, on the southeast corner of South First and Jackson streets. The bench mark is the top of the hydrant.

Hydrant 2.—Is at *Waco, McLennan County, Tex.*, on the northwest corner of Thirteenth and Jackson streets, near large cotton factory. The bench mark is the top of the hydrant.

G₄.—Is at *Waco, McLennan County, Tex.*, at the northwest corner of Fifth and Jackson streets, in a brick building occupied by bottling works, 10 inches below the third window from the front of the building on the side toward the Missouri, Kansas and Texas main track. (See note 13, p. 581.)

H₄.—Is at *Hewitt, McLennan County, Tex.*, between two telegraph poles, 100 yards north of the station, 4 feet from either pole, and about 70 feet west of the Missouri, Kansas and Texas track, in the right of way. (See note 40, p. 584.)

I₄.—Is at *Lorena, McLennan County, Tex.*, 100 feet east of the Missouri, Kansas and Texas Railway track, in very rocky ground about two telegraph poles south of the water tank, and near the highway, across the track from a cotton gin. (See note 40, p. 584.)

J₄.—Is at *Eddy, McLennan County, Tex.*, in the Missouri, Kansas and Texas Railway right of way, 45 feet west of the track, and 300 yards north of the depot. The stone is in rocky ground, and could be sunken only a part of its length, the stones and dirt being mounded about it to a height of 1 foot. (See note 40, p. 584.)

K₄.—Is at *Troy, Bell County, Tex.*, 5 feet south of the second telegraph pole south of the depot; 50 feet east of the Missouri, Kansas and Texas Railway main track, 30 feet west of the side track. (See note 40, p. 584.)

L₄.—Is at *Temple, Bell County, Tex.*, at the crossing of the Missouri, Kansas and Texas and the Santa Fe railways, 60 feet west from the Missouri, Kansas and Texas track, and 40 feet north of the Gulf, Colorado and Santa Fe track, halfway between a telephone pole and its guy-wire pole. (See note 40, p. 584.)

M₄.—Is at *Temple, Bell County, Tex.*, on the south side of the stone building on the corner of Depot and Main streets, occupied by the Palace saloon, in the alley corner of the building, 3 feet above the sidewalk, and 8 inches from the corner of the building. (See note 13, p. 581.)

N₄.—Is at *Temple, Bell County, Tex.*, in the right of way of the Missouri, Kansas and Texas Railway, across the track from a large cotton oil mill, 35 feet east of the main track and 1 foot from the fence, 6 feet south of a telephone pole and diagonally opposite the railroad crossing sign. (See note 40, p. 584.)

DESCRIPTION OF PERMANENT BENCH MARKS BETWEEN TEMPLE AND LAMPASAS NORTH-EAST BASE, TEX.

O₄.—Is near *Belton, Bell County, Tex.*, in the northwest stone abutment of the iron bridge, Gulf, Colorado and Santa Fe Railway, across the Leon River, 2 inches from the north and east edges of the top stone. (See note 5, p. 580.)

P₄.—Is at *Nolanville, Bell County, Tex.*, 3 feet south of the first telegraph pole west of mile pole 233, in the right of way of the Gulf, Colorado and Santa Fe Railway, 30 feet south of the track. (See note 40, p. 584.)

Q₄.—Is near *Killeen, Bell County, Tex.*, in the right of way of the Gulf, Colorado and Santa Fe Railway, 2 feet south of mile pole 241, and 60 feet south of the track. (See note 40, p. 584.)

R₄.—Is near *Copperas Cove, Coryell County, Tex.*, in the right of way of the Gulf, Colorado and Santa Fe Railway, 10 feet south of the first telegraph pole east of mile pole 250 and 40 feet south of the railroad. (See note 40, p. 584.)

S₄.—Is near *Copperas Cove, Coryell County, Tex.*, in the north top stone of the stone arch one-fourth mile east of Copperas Cove on the Gulf, Colorado and Santa Fe Railway, 2 inches from the north and east edges of the stone, and 4 feet below the track level. (See note 5, p. 580.)

Gilmore Δ .—Is about 2 miles southwest of *Copperas Cove, Coryell County, Tex.*, upon the highest point of a wooded starfish-shaped mountain, upon the land of J. N. Gilmore, 150 yards north of the telephone line where it crosses the ridge; about $1\frac{1}{4}$ miles a little southwest of the house of H. B. Scott, and about three-fourths mile south of the house of C. H. Casper. The station mark is a galvanized iron pipe 2 inches in diameter and 18 inches long. The pipe was filled with concrete level with the surface of the ground, the top of the pipe being covered $1\frac{1}{2}$ inches with the cement. A 60-penny wire nail was set in the upper end of the pipe, and the top of the nail is the bench mark.

Gilmore Reference Mark.—Is about 2 miles southwest of *Copperas Cove, Coryell County, Tex.*, and is 91.106 meters northeast of the station mark. It is marked by a terra cotta pipe 2 feet long, covered with cement one-half inch thick. A 60-penny wire nail was set in the cement to mark the station, and the top of the nail is the bench mark.

T₄.—Is near *Kempner, Lampasas County, Tex.*, in the right of way of the Gulf, Colorado and Santa Fe Railway, south of the track 60 feet, and halfway between mile pole 262 and the right of way fence. (See note 40, p. 584.)

U₄.—Is 3 miles east of *Lampasas, Lampasas County, Tex.*, in the right of way of the Gulf, Colorado and Santa Fe Railway, 20 feet south of the track and 20 feet from the fence; 50 feet west of mile pole 271. (See note 40, p. 584.)

Lampasas N. E. Base.—Is in *Lampasas County, Tex.*, about $2\frac{1}{2}$ miles south 80° E. of *Lampasas*, 250 meters north of the "Lampasas-Belton" Road, on the highest and most northerly wooded point, and about 300 meters south of Sulphur Creek, on the land of J. W. Mosely. (See note 31, p. 583.)

Lampasas S. W. Base.—Is about 2 miles southeast of *Lampasas, Lampasas County, Tex.*, on the land of J. H. H. Berry. (See note 31, p. 583.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN TEMPLE AND HOLLAND, TEX.

V₄.—Is one-fourth mile south of *Little River, Bell County, Tex.*, in the right of way of the Missouri, Kansas and Texas Railway, 70 feet west of the main track and 7 feet south of the telephone pole opposite milepost 888. (See note 40, p. 584.)

W₄.—Is one-fourth mile south of *Holland, Bell County, Tex.*, in the northeast concrete abutment of the iron bridge, 1 inch from the south and east edges of the stone (artificial) shelf on which the iron work rests. (See note 3, p. 580, except the letters are at the corner of the square.)

X₄.—Is at *Holland Bell County, Tex.*, in the brick building occupied by the Bank of Holland. The building is on the north side of the main street and is the easternmost building of the row. The bench mark is 3 feet from the corner and 4 feet from the ground, in the wall facing the Missouri, Kansas and Texas track. Building partially burned and rebuilt previous to November, 1903, but without apparently changing the bench mark. (See note 14, p. 581.)

Y₄.—Is at *Holland, Bell County, Tex.*, in the east wall of the building occupied and owned by the Mewhinney Mercantile Company. It is 4 feet from the northeast corner, 4 feet from the ground, and slightly above the stairway leading to the public hall. (See note 14, p. 581.) Reported destroyed, November, 1903.

Z₄.—Is at *Holland, Bell County, Tex.*, in a brick culvert 300 yards north of the Missouri, Kansas and Texas station. The cut is east of the track, and 2 inches from the north and east edges of the cement top of the culvert. (See note 5, p. 580.) Reported settled, November, 1903.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN NORFOLK, NEBR., AND SIOUX CITY, IOWA.

N₁.—Is at *Norfolk, Madison County, Nebr.* (See App. 8, Report for 1899, p. 653.)

O₁.—Is at *Norfolk, Madison County, Nebr.* (See App. 8, Report for 1899, p. 653.)

P₁.—Is at *Norfolk, Madison County, Nebr.* (See App. 8, Report for 1899, p. 653.)

Q₁.—Is at *Hope, Madison County, Nebr.*, about 5 meters west of the main track of the Chicago, St. Paul, Minneapolis and Omaha Railway, 150 feet south of north head block, about 8 feet northwest of milepost No. 44 and about 300 feet north of a line connecting the insane asylum and Mrs. Keiner's house. (See note 17, p. 582.)

R₁.—Is at *Hoskins, Wayne County, Nebr.*, about 15 meters southeast from the office of the Sidney Grain Company, about 30 meters northeast of the store owned by Ludwig Zeiner, in the south corner of land owned by Mr. John Foster, and between the last two trees from the south end of the row separating his land from the road. (See note 17, p. 582.)

S₁.—Is at *Apex, Wayne County, Nebr.*, about 350 feet from the north head block of the switch of the Chicago, St. Paul, Minneapolis and Omaha Railway, and 10 feet west of the track. (See note 17, p. 582.)

T₁.—Is at *Winside, Wayne County, Nebr.*, in the eastern end of the little park owned by the town, between the two center trees of the east row, 28.8 meters north of the Chicago, St. Paul, Minneapolis and Omaha Railway, 1.8 meters west of the eastern fence of the park, and 44.6 meters east of the eastern side of the band stand in the center of the park. (See note 17, p. 582.)

U₁.—Is at *Wayne, Wayne County, Nebr.*, in the south front of the two-story brick building owned by the First National Bank, 13.12 meters west from the stone column supporting the southeast corner, 3.25 meters from the east side of the door leading into Messrs. Strahn & Grimsley's office, in the support between the fourth and fifth windows from the southeast corner, in second course of brick from the foundation, in the second brick from fourth window, and in the fourth brick from the east edge of the fifth window. (See note 8, p. 581.)

V₁.—Is at *Wakefield, Dixon County, Nebr.*, in the east front of the store owned by G. M. Hypse, of Omaha, and occupied by Mr. Collins as a clothing store, in the support on the northeast corner, in the sixteenth course of brick from the bottom and in the second brick from the north side. (See note 8, p. 581.)

W₁.—Is at *Ridge, Thurston County, Nebr.*, about 5 miles north of Wakefield, 28.3 meters directly north of the central switch post of the Chicago, St. Paul, Minneapolis and Omaha Railway. (See note 17, p. 582.)

X₁.—Is at *Emerson, Dixon County, Nebr.*, in the north front of the three-story brick grist mill owned by James McHenry, about 425 feet southwest from the depot of the Chicago, St. Paul, Minneapolis and Omaha Railway, and about 225 feet south from the

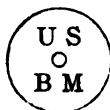
main track, 19.68 meters east of the northwest corner of the mill, 13.5 meters west of the northeast corner of the elevator part of mill, 1.18 meters above surface of the earth, in the seventh brick east of the large door on the north side and 1.29 meters east of east side of door, 0.475 meter above the middle small cellar window on the north side, and 1.185 meters below and to the left of the most easterly window in the mill. (See note 8, p. 581.)

Y₁.—Is at *Nacora, Dakota County, Nebr.*, on the property of Mr. H. F. Mosema and leased by Mr. M. B. McCarty, 46.8 meters northeast of the building of the Peavey Elevator Company, 17.4 meters southwest of the store on Mr. Mosema's property, and 27.6 meters east of the Chicago, St. Paul, Minneapolis and Omaha Railway. (See note 17, p. 582.)

Z₁.—Is at *Hubbard, Dakota County, Nebr.*, on the property of the Peavey Elevator Company, 4.5 meters north of the intersection of the main street and the Chicago, St. Paul, Minneapolis and Omaha Railway track, and 11.3 meters from the latter. (See note 17, p. 582.)

A₂.—Is at *Coburn, Dakota County, Nebr.*, at the intersection of the Newcastle Railway and the Chicago, St. Paul, Minneapolis and Omaha Railway, 5.2 meters from the frog, 2.9 meters from switch post, and 35.5 meters from east end of depot platform. (See note 17, p. 582.)

M. R. C. Dakota City.—Is an iron-pipe post at *Dakota City, Dakota County, Nebr.*, in the northeast corner of the court-house grounds, 8.25 meters east of the east tree in the north row, and 8.8 meters north of the north tree of the east row of trees in the grounds, and 66.2 meters northeast from northeast corner of the court-house. The top of cap is marked



and the center is the bench mark.

B₂.—Is at *South Sioux City, Dakota County, Nebr.*, on the graded ground north of the Chicago, St. Paul, Minneapolis and Omaha Railway station, 7.2 meters from intersection of inside rails of main track and switch, 6.3 meters from former and 6.15 meters from latter. (See note 17, p. 582.)

P. B. M. 395=Gauge B. M.—Is in *Sioux City, Woodbury County, Iowa*. (See App. 8, Report for 1899, p. 841.)

P. B. M. 396= $1\frac{1}{2}$.—Is in *Sioux City, Woodbury County, Iowa*. (See App. 8, Report for 1899, p. 841.)

P. B. M. 397.—Is about $3\frac{1}{2}$ miles above *Sioux City, Woodbury County, Iowa*. (See App. 8, Report for 1899, p. 841.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN NORFOLK AND PAGE, NEBR.

O₁.—Is at *Norfolk, Madison County, Nebr.* (See App. 8, Report for 1899, p. 653.)

P₁.—Is at *Norfolk, Madison County, Nebr.* (See App. 8, Report for 1899, p. 653.)

C₂.—Is at *Hadar, Pierce County, Nebr.*, 0.89 meter from the northwest corner of the office of the grain, coal, and lumber firm of Nye & Schneider Company, and 0.76 meter from the northwest corner of the bay window, 46 paces east of the Fremont, Elkhorn and Missouri Valley Railroad track. (See note 14, p. 581.)

D₂.—Is at *Pierce, Pierce County, Nebr.*, in the stone foundation of the court-house, 4.8 meters from the southeast corner, in the fifth course of stone from the bottom, 1.36 meters from the south end of the fifth stone from the southeast corner, 3 meters south of the large doorway on the east side, and directly above the second basement window from the southeast corner. (See note 8, p. 581.)

E₂.—Is at *Foster, Pierce County, Nebr.*, 1.2 meters northwest of and in line with the northeast side of the elevator of the Nye & Schneider Company, 35 paces south of their office and 31 paces northeast of the Fremont, Elkhorn and Missouri Valley Railroad track. (See note 14, p. 581.)

F₂.—Is at *Plainview, Pierce County, Nebr.*, in the west side of the Farmers' State Bank (Incorporated) Building, at the intersection of Main and Locust streets, in the ninth course of brick above the corner stone under the southwest corner and in the second brick from the corner. (See note 8, p. 581.)

G₂.—Is at *Plainview, Pierce County, Nebr.*, on the building on the north side of Locust street, owned by N. M. Nelson and occupied by him as a hardware store, in the brick pillar supporting the southeast corner, in the middle brick, in the ninth course of brick above the corner stone. (See note 8, p. 581.)

H₂.—Is at *Brunswick, Antelope County, Nebr.*, 10 paces southwest from the elevator of the Sidman Grain Company and 1 meter from the northwest corner of and in line with the west side of their office and 25 paces south of the Great Northern Railway track. (See note 14, p. 581.)

I₂.—Is at *Savage, Antelope County, Nebr.*, 52 meters west of the west face of the depot and 11.6 meters north of the north rail of the Great Northern Railway, 2.44 meters north of the north pile of and in line with the west row of four piles supporting the water tank. (See note 14, p. 581.)

J₂.—Is at *Orchard, Antelope County, Nebr.*, 58 meters east of the station, in line with and between the first and second telegraph poles east of the station; 5.1 meters north of the main track and 8.3 meters south of the siding of the Great Northern Railway. (See note 14, p. 581.)

K₂.—Is at *Page, Holt County, Nebr.*, at the north corner formed by the west and south platforms to the station, 4.02 meters from the southwest corner of the depot and 4.8 meters north of the north rail of the Great Northern Railway. (See note 14, p. 581.) Reported firm and stable in 1901.

L₂.—Is 1½ miles north of *Page, Holt County, Nebr.*, 2.1 meters north of the row of trees separating the property of Mr. C. W. Denel from the east and west road, 110 paces southwest of the southwest corner of his home, and 62 paces west of the doorway. (See note 14, p. 581.) It was reported in 1901 that the soil was separated from the stone by a crack and the stone was movable to a slight extent by pressure from the hands.

M₂.—Is 1½ miles north and 1 mile west of *Page, Holt County, Nebr.*, 17.3 meters east of the southeast corner of Mr. William Lord's house, and 100 paces southeast of Page Southwest Base. (See note 14, p. 581.) It was reported in 1901 that the bench mark seemed firm although the soil was separated from it.

Page Southwest Base Δ .—Is about 2 miles north and 1 mile west of *Page, Holt County, Nebr.*, 12 miles east of and 2 miles south of O'Neill, on the land owned by Mr. William Lord, northwest of his dwelling about 100 meters, on a limestone block 24 by 24 by 14 inches, securely set in cement, lettered, and with a copper bolt in the center of its upper surface marked with cross lines.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN PAGE AND CHADRON, NEBR.

Page Southwest Base Δ .—Near *Page, Holt County, Nebr.*

M₁.—Near *Page, Holt County, Nebr.*

L₁.—Near *Page, Holt County, Nebr.*

K₁.—At *Page, Holt County, Nebr.*

N₁.—Is about 3 miles east of *O'Neill, Holt County, Nebr.*, T. 28, R. 11, on the right of way of the Great Northern Railway, 13.8 meters south of the track, 170 paces west of milepost 124, and 100 paces east of the country road crossing the railroad diagonally in line with fence dividing the farm of David Babcock from that of Mr. Stainsley, and 1.2 meters from railroad right of way fence. (See note 15, p. 581.)

O₁.—Is in *O'Neill, Holt County, Nebr.*, in the lower stair of the entrance to the First National Bank, at the northeast corner of the step, 5 inches from outside of stone, 3 inches from the end, and 4 inches from the wall of the building. (See note 7, p. 581.)

P₁.—Is at *O'Neill, Holt County, Nebr.*, in the court-house square, 21 meters south of the southwest corner of the brick foundations, in a line with the west face of the building 12 meters east of the inside of the sidewalk, on a white limestone post, established for a magnetic station 32 inches long, set 29 inches in the ground, 4 by 4 inches on top, lettered U. S. C. & G. S. A small hole in the center of the top surface is the bench mark.

Q₁.—Is at *Emmet, Holt County, Nebr.*, on a stone culvert, 48 feet east of the switch signal east of the station on the Fremont, Elkhorn and Missouri Valley Railroad, on the north side of the track, in the middle of the west one of two top stones, 0.3 meter west of the east end. (See note 5, p. 580.)

R₁.—Is about 4 miles east of *Atkinson, Holt County, Nebr.*, T. 30, R. 14, sec. 11, on the right of way, on the south side of the track, 13½ meters from the track, 1.2 meters from the right-of-way fence, and 11½ meters from the road crossing the railroad at this point. The adjoining land is said to belong to a Mrs. Minor. (See note 15, p. 581.) The post is dressed 6 by 6 inches and is marked

U S

□

B M

S₁.—Is at *Atkinson, Holt County, Nebr.*, in the southwest corner of the stone base of the railway water tower, 47 paces west of the station and 5 paces from the north rail of the track. (See note 7, p. 581.)

T₁.—Is about 3 miles east of *Stuart, Holt County, Nebr.*, in a concrete culvert of the Fremont, Elkhorn and Missouri Valley Railroad, on the south side of the tracks, on the west side of the culvert, on the lower ledge, 1 meter from the south end, and 0.25 meter from the inside edge. (See note 7, p. 581.)

U₁.—Is at *Stuart, Holt County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, about 286 meters west of the station, on the south side of the track and in line with the telegraph poles, 12.45 meters from the south rail of the main track, and 26 paces west of section tool house. (See note 15, p. 581.)

V₁.—Is at *Newport, Rock County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, on the north side of the track, 3.6 meters from the north rail of the main track and 5.1 meters west of the station. (See note 15, p. 581.)

W₂.—Is about 6 miles east of *Bassett, Rock County, Nebr.*, T. 30, R. 18, sec. 4, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, 15 meters from where the county road crosses the railroad, 1.9 meters north of the railroad fence, and 2.5 meters west of the fence along the country road, in line with the telegraph poles, 12.35 meters south of the south rail of the track. (See note 15, p. 581.)

X₂.—Is at *Bassett, Rock County, Nebr.*, on the railroad right of way, on the south side of the track, 5.9 meters south of the south rail of the main track, in line with and 7.35 meters east of the Fremont, Elkhorn and Missouri Valley Railroad station. (See note 15, p. 581.)

Y₂.—Is at *Long Pine, Brown County, Nebr.*, in a lot by the depot of the Fremont, Elkhorn and Missouri Valley Railroad, 1.2 meters north of the fence along the railroad, and 3.6 meters from the fence along the street. (See note 15, p. 581.)

Z₂.—Is at *Ainsworth, Brown County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, in line with the telegraph poles, about 44 rods west of the station, 11.8 meters south of the south rail of the main track, and 11.3 meters west of the railroad section tool house. (See note 15, p. 581.)

A₃.—Is 2 miles east of *Johnstown, Brown County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, in line with the telegraph poles, 13.4 meters south of the south rail of the track, and 1 meter north of railroad fence at a point where a line fence meets the railroad fence. (See note 15, p. 581.)

B₃.—Is about 3 miles east of *Woodlake, Cherry County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, just across the tracks from milepost, "Fremont 241 miles," in line with the telegraph poles, 11.3 meters south of the south rail of the track, and 3.7 meters north of the railroad fence. (See note 15, p. 581.)

C₃.—Is about 3 miles west of *Woodlake, Cherry County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, at milepost, "Fremont 247 miles," 12.7 meters north of north rail of the track, and 1.6 meters south of the milepost. (See note 15, p. 581.)

D₃.—Is about 1 mile west of *Arabia, Cherry County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, in line with the telegraph poles, about 10 rods west of milepost, "Fremont 254 miles," 1.3 meters north of railroad fence, and 13.5 meters south of the south rail of the track. (See note 15, p. 581.)

E₃.—Is at *Thacher, Cherry County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, in line with the telegraph poles, 32.3 meters east of the post bearing the sign of "Thacher," just across the track from the railroad section tool house, and 5.2 meters south of the south rail of the main track. (See note 15, p. 581.)

F₃.—Is at *Valentine, Cherry County, Nebr.*, on the south side of the steps leading to the main entrance of the new county court-house, about the center of the horizontal end of the stone. (See note 16, p. 581.)

G₃.—Is about 4 miles east of *Crookston, Cherry County, Nebr.*, in a stone culvert at milepost, "Fremont 277 miles," on the south side of the railroad and 3.8 meters from the south rail, in the center of a large stone on the east wing of the culvert, 1 decimeter from the end of the stone. (See note 16, p. 581.)

H₈.—Is about 2 miles west of the town of *Crookston, Cherry County, Nebr.*, in line with the telegraph poles on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, about $3\frac{1}{2}$ rods west of milepost, "Fremont 283 miles," 14.1 meters south of the south rail of the track and 6 decimeters north of the railroad fence. (See note 15, p. 581.)

I₈.—Is at *Georgia, Cherry County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, 19.7 meters southeast of post bearing sign of "Georgia," 3 meters northwest of the section house, and 8.6 meters south of the south rail of track. (See note 15, p. 581.)

J₈.—Is at *Nenzil, Cherry County, Nebr.*, at the northeast corner of a lot by the railroad section house, about 8 rods west of a post bearing sign of "Nenzil," 5 meters south of the south rail of the Fremont, Elkhorn and Missouri Valley Railroad track. (See note 15, p. 581.)

K₈.—Is a stone post at *Cody, Cherry County, Nebr.*, 70.5 meters west of the southwest corner of the railroad station, 19.3 meters southeast of the southeast corner of the section house, 46 paces east of the southeast corner of the coaling station, and 3.9 meters north of the north rail of the main track.

L₈.—Is 7 miles west of *Cody, Cherry County, Nebr.*, in stone culvert No. 509, on the Fremont, Elkhorn and Missouri Valley Railroad, in the southeast wing of the culvert abutment and 2.5 decimeters from the end on the coping stone, 2 decimeters from each side, and 5.4 meters south of the south rail of the track. (See note 17, p. 582.)

M₈.—Is a mile west of *Eli, Cherry County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, in line with the telegraph poles, 36.9 meters west of post marked "Station one mile," and 10.9 meters south of the south rail of the track. (See note 15, p. 581.)

N₈.—Is 5 miles west of *Eli, Cherry County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, east of milepost 326, just east of a cut and south of a railroad crossing. (See note 15, p. 581.)

O₈.—Is about three-fourths of a mile east of *Merriman, Cherry County, Nebr.*, on a stone culvert on the south side of track on the coping stone, 22 centimeters from the end and 25 centimeters from either side, 3.7 meters from the south rail of the track. (See note 7, p. 581.)

P₈.—Is 6 miles west of *Merriman, Cherry County, Nebr.*, in stone culvert on the Fremont, Elkhorn and Missouri Valley Railroad, on the coping stone running parallel with the railroad, 53 centimeters from the west end and 25 centimeters from the north edge, 3.6 meters north of the north rail. (See note 16, p. 581.)

Q₈.—Is at *Irwin, Cherry County, Nebr.*, on the Fremont, Elkhorn and Missouri Valley Railroad right of way, 35 paces southeast of post bearing name "Irwin," and 7.8 meters northwest of the northwest corner of western section house. (See note 15, p. 581.)

R₈.—Is about 5 miles east of *Gordon, Sheridan County, Nebr.*, on railroad culvert No. 552, on the Fremont, Elkhorn and Missouri Valley Railroad, east of milepost 355 miles from Fremont, on the south wing of the east abutment, on the top stone of the stepping of the wall, 12 centimeters from the end of the stone and 11 centimeters from the side, 5.5 meters south of the south rail. (See note 5, p. 580.)

S₂.—Is at *Gordon, Sheridan County, Nebr.*, on the Fremont, Elkhorn and Missouri Valley Railroad, near the southwest corner of the park at the east end of the station, 6.6 meters from the southeast corner of the station, near the intersection of the platforms running at right angles on the south and east sides of the station, 4.2 meters north of the north rail of the track. (See note 15, p. 581.)

T₂.—Is at *Gordon, Sheridan County, Nebr.*, at the entrance to the Maverick Bank, on the west side of the street intersecting the railroad just west of the station, at the north end and near the outer edge of the stone sill. (See note 16, p. 581.)

U₂.—Is about 1 mile east of *Clinton, Sheridan County, Nebr.*, in stone culvert No. 573, on the Fremont, Elkhorn and Missouri Valley Railroad, in the top step of the north wing of the east abutment, 17 centimeters from the end of the stone and 13 centimeters from the side, 3.55 meters north of north rail of track. (See note 16, p. 581.)

V₂.—Is at *Rushville, Sheridan County, Nebr.*, in the park adjoining the east end of the station of the Fremont, Elkhorn and Missouri Valley Railroad, 6.2 meters east of the northeast corner of the station, near the corner formed by the intersection of the platforms on the north and east sides of the depot, 4.2 meters south from the south rail of the track. (See note 15, p. 581.)

W₂.—Is $5\frac{1}{4}$ miles west of *Rushville, Sheridan County, Nebr.*, on stone culvert No. 597, on the Fremont, Elkhorn and Missouri Valley Railroad, at the east end of the large coping stone which lies parallel with the track, 20 centimeters from the east end and 20 centimeters from the north side of the stone, 5.1 meters north of the north rail. (See note 7, p. 581.)

X₂.—Is at *Hay Springs, Sheridan County, Nebr.*, in the lawn adjoining the west end of the railroad station of the Fremont, Elkhorn and Missouri Valley Railroad, 5.9 meters from the southwest corner of the station, 4.1 meters north of the north rail, and 21.7 meters northwest of the northwest corner of the grain elevator opposite the station. (See note 15, p. 581.)

Y₂.—Is 1 mile east of *Bordeaux, Dawes County, Nebr.*, in stone culvert No. 635, on the Fremont, Elkhorn and Missouri Valley Railroad, in the north wing of the east abutment, in the middle of the stone 40 centimeters from the end, and 5.4 meters north of the north rail of the track. (See note 7, p. 581.)

Z₂.—Is 3 miles east of *Chadron, Dawes County, Nebr.*, on stone culvert No. 653, on the south side of the track of the Fremont, Elkhorn and Missouri Valley Railroad, in the middle stone over the arch, 13 centimeters from the south edge of the stone, between two large notches cut in the edge of the stone. (See note 5, p. 580.)

A₄.—Is at *Chadron, Dawes County, Nebr.*, near the junction of Main avenue with the Fremont, Elkhorn and Missouri Valley Railroad, just east of the avenue, at the west end of the grass plot adjoining the office of the American Express Company, 63 steps west of the west wall of the express office, $4\frac{1}{2}$ steps south of the line of telegraph poles running along the north fence of the grass plot, 14.7 meters south of the south rail of the main track. (See note 15, p. 581.)

B₄.—Is at *Chadron, Dawes County, Nebr.*, in the north and front entrance to the court-house, in the west stone supporting two iron columns, between the column and the wall, 20 centimeters from the east side of the stone and 73 centimeters from the north edge, $19\frac{1}{2}$ centimeters from the brick column projecting beyond the main wall and $41\frac{1}{2}$ centimeters from the main entrance wall. (See note 16, p. 581.)

C₁.—Is 1 mile west of *Chadron, Dawes County, Nebr.*, 123.7 meters east of the post bearing the sign "Station, one mile." It is 12.9 meters south of south rail of track and in line with telegraph poles. (See note 15, p. 581.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN CHADRON, NEBR., AND ORIN JUNCTION, WYO.

A₁.—*Chadron, Dawes County, Nebr.*

B₁.—*Chadron, Dawes County, Nebr.*

C₁.—*Chadron, Dawes County, Nebr.*

D₁.—Is $7\frac{1}{2}$ miles west of *Chadron* and nearly 8 miles east of *Whitney*, in *Dawes County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, 17 rails west of milepost 414, 9 rails west of trestle 670, about 33 feet south of the center of the track, and about 6 feet north of the wire fence. (See note 17, p. 582.)

E₁.—Is at *Whitney, Dawes County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, 100 yards west of the railroad station, about 20 feet north of the track, in the corner of the section-house yard nearest the depot and the track. (See note 17, p. 582.)

F₁.—Is $3\frac{1}{2}$ miles east of *Crawford, Dawes County, Nebr.*, at milepost 429, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, on the south side of the track, 33 feet from the center of the track and 12 feet from the fence. (See note 17, p. 582.)

G₁.—Is at *Crawford, Dawes County, Nebr.*, on the west side of the brick building known as the Syndicate Block, on the corner now occupied by the Bank of Crawford, a few inches above the sidewalk, 6 or 7 feet from the southwest corner, 10 inches from the north end of the stone sill. (See note 3, p. 580.)

H₁.—Is at *Fort Robinson, Dawes County, Nebr.*, in the corner of the station park, 3 feet from the east and north fences, 66 feet east of the east end of the depot, and 20 feet south of the center of the track. (See note 17, p. 582.)

I₁.—Is about 7 miles west of *Fort Robinson* and three-fourths mile east of *Glen*, in *Sioux County, Nebr.*, about one-third mile west of milepost 442, on the north side of the track, on the east abutment (concrete) of a small culvert, No. 725, under the Fremont, Elkhorn and Missouri Valley Railroad, $2\frac{1}{2}$ feet from the north end. (See note 3, p. 580.)

J₁.—Is one-half mile east of *Andrews*, in *Sioux County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, $30\frac{1}{2}$ rails east of milepost 451, and $4\frac{1}{2}$ rails east of the tile drain No. 750 $\frac{1}{2}$, on the south side of the track, 36 feet from its center and 10 feet from the fence. (See note 17, p. 582.)

K₁.—Is about $1\frac{1}{2}$ miles east of *Harrison, Sioux County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, $2\frac{1}{2}$ rails east of milepost 459, 9 paces south of the railroad track and about 3 paces north of a telegraph pole. (See note 17, p. 582.)

L₁.—Is at *Harrison, Sioux County, Nebr.*, on the county court-house, near the middle of the south wall, which is of very soft brick, in the second row of brick above the water table, 3 feet east of the east side of the middle (closed) window. The letters U. S. B. M. were cut on the vertical face of the sandstone water table underneath the

bench mark with an arrow directly below the bench mark and pointing toward it. (See note 8, p. 581.)

M₄.—Is $6\frac{1}{2}$ miles west of *Harrison, Sioux County, Nebr.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, opposite milepost 467, in line with the telegraph poles on the south side of the track. (See note 17, p. 582.)

U₁.—Is 3 miles west of *Van Tassel, in Converse County, Wyo.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, $11\frac{3}{4}$ rails east of milepost 474, in line with the telegraph poles on the south side of the track, 35 feet from the center of the track and 65 feet from the fence, about opposite the grade point at the western end of a shallow cut. (See note 17, p. 582.)

V₁.—Is at *Node Ranch, Converse County, Wyo.*, opposite and 7 feet south of the station sign, about 300 yards east of section house No. 92, 24 feet south of the station platform, and 36 feet south of the center of the main track. (See note 17, p. 582.)

W₁.—Is at *Lusk, Converse County, Wyo.*, in the northwest corner of the station park, 8 feet from either fence, 115 feet west of the west end of the depot, and 18 feet south of the center of the main track. (See note 17, p. 582.)

X₁.—Is at *Manville, Converse County, Wyo.*, 6 paces west of milepost 500, about 45 feet north of the center of the Fremont, Elkhorn and Missouri Valley Railroad track, and 6 rails west of where the main street of Manville crosses the track. (See note 17, p. 582.)

Y₁.—Is at *Keeline, Converse County, Wyo.*, 10 rails west of section house 96, and 1 rail east of the east end of station platform, 72 feet south of the track, 21 feet north of the fence. (See note 17, p. 582.)

Z₁.—Is at *Lost Spring, Converse County, Wyo.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, $18\frac{1}{2}$ rails west of the west end of the station platform, in line with the telegraph poles, and the south side of section house 97, 9 rails east of the east side of section house, 16 paces from the center of the track, and 16 paces from the fence. (See note 17, p. 582.)

A₂.—Is at *Shawnee, Converse County, Wyo.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, in line with the telegraph poles, 57 feet from the fence, 39 feet south of the track, $6\frac{3}{4}$ rails west of the switch stand, and $5\frac{1}{2}$ rails east of the station sign. (See note 17, p. 582.)

B₂.—Is at *Fisher, Converse County, Wyo.*, on the right of way of the Fremont, Elkhorn and Missouri Valley Railroad, 42 feet south of the track, in line with the telegraph poles, 2 rails east of the east end of the station platform, and $3\frac{1}{2}$ rails east of the station sign. (See note 17, p. 582.)

R₁.—*Orin Junction, Converse County, Wyo.* (See p. 802.)

S₁.—*Orin Junction, Converse County, Wyo.* (See p. 802.)

T₁.—*Orin Junction, Converse County, Wyo.* (See p. 802.)

DESCRIPTIONS OF PERMANENT BENCH MARKS, CHEYENNE-ORIN JUNCTION, WYO.

B.—At *Cheyenne, Laramie County, Wyo.* (See App. 8, Report for 1899, p. 645.)

E.—At *Cheyenne, Laramie County, Wyo.* (See App. 8, Report for 1899, p. 645.)

X.—Is about $4\frac{1}{2}$ miles east of *Silver Crown, Laramie County, Wyo.*, T. 14 S. R. 68 W., on the right of way of the Colorado and Southern Railroad, about 100 yards

from North Crow Creek in the line of telegraph poles, 11 steps to the right of the track going northward, between the eighth and ninth telegraph poles to the south of telegraph mile pole No. 9 (from Cheyenne), 15 poles north of telegraph pole No. 8 and 21 steps from the nearest pole. (See note 11, p. 581.)

Y.—Is at *Silver Crown, Laramie County, Wyo.*, T. 14 S. R. 68 W., in the southwest stone pier of the water tank on the Colorado and Southern Railroad. (See note 3, p. 580.)

Z.—Is about 1 mile northwest of *Volente, Laramie County, Wyo.*, about 10 feet north of telegraph pole No. 21, about 60 feet east of the railroad track in a pasture owned by Mr. Arnold, 2 miles south of his ranch house. (See note 11, p. 581.)

A₁.—Is at *Islay, Laramie County, Wyo.*, about 50 feet east of the railroad track, in the line of telegraph poles, about 10 feet north of the first pole south of the station. (See note 11, p. 581.)

B₁.—Is about 1 mile west of *Horse Creek, Laramie County, Wyo.*, about 10 feet west of the second telegraph pole west of telegraph mile pole No. 34, about 50 feet north of the railroad track. The post is set 4 feet in the ground. (See note 11, p. 581.)

C₁.—Is about 3½ miles south of *Iron Mountain, Laramie County, Wyo.*, in the line of telegraph poles, about 30 feet south of telegraph mile pole No. 42, about 50 feet east of the railroad track. (See note 11, p. 581.)

D₁.—Is about 2½ miles northeast of *Iron Mountain, Laramie County, Wyo.*, on the stone foundation of the most eastern one of the two north iron supports of the water tank on the Colorado and Southern Railroad. (See note 3, p. 580.)

E₁.—Is about 3 miles south of *Diamond, Laramie County, Wyo.*, on the right of way of the Colorado and Southern Railroad, about 50 feet east of the railroad track, in the line of telegraph poles, between the ninth and tenth poles south of mile pole No. 57. (See note 11, p. 581.)

F₁.—Is 5.3 miles north of *Diamond, Laramie County, Wyo.*, on the right of way of the Colorado and Southern Railroad, about fifty feet east of the track and in the line of telegraph poles, about 20 feet south of telegraph mile pole 65. (See note 11, p. 581.)

G₁.—Is 2½ miles north of *Chugwater, Laramie County, Wyo.*, on the right of way of the Colorado and Southern Railroad, about 50 feet east of the track and about 15 feet south of mile pole No. 73. (See note 11, p. 581.)

H₁.—Is about 3 miles south of *Bordeaux, Laramie County, Wyo.*, on the right of way of the Colorado and Southern Railroad, about 50 feet east of the railroad track, between the sixth and seventh telegraph poles north of mile pole 81. (See note 11, p. 581.)

I₁.—Is 6.7 miles south of *Wheatland, Laramie County, Wyo.*, on the right of way of the Colorado and Southern Railroad, about 40 feet north of the railroad track, between the first and second telegraph poles west of telegraph mile pole 89, about 50 feet west of the first pole east of telegraph mile pole 89. (See note 11, p. 581.)

J₁.—Is at *Wheatland, Laramie County, Wyo.*, about 100 feet west of the main railroad track, one block north of the depot, in the stone foundation, on the east side of the Wheatland Roller Mills, about 20 feet from the south end of the building, 20 inches above the ground; 10 inches below the twenty-ninth brick of the first course numbering from the south end of the building, 3 feet north of the south wareroom door. (See note 10, p. 581.)

4737 CHYN.—Is a bench mark of the United States Geological Survey at *Wheatland, Laramie County, Wyo.*, about 115 feet east of the Colorado and Southern railroad depot. It is an iron pipe, about three inches in diameter, projecting about 15 inches above the ground with a bronze cap, $3\frac{1}{2}$ inches in diameter, riveted on the top. Around the circumference of the cap is lettered, "United States Geological Survey," and at the center are two intersecting lines and the lettering "Elevation 4737 feet." Just below this is marked CHYN 59 B. M. The intersection of the lines is the bench mark.

K₁.—Is at *Uva, Laramie County, Wyo.*, in the southwest stone pier of a water tank on the north side of the Colorado and Southern railroad. (See note 3, p. 580.)

L₁.—Is about a mile southeast of *Buckhorn, Laramie County, Wyo.*, about 40 feet north of the railroad track and about 12 feet west of the telegraph mile post 111. (See note 11, p. 581.)

M₁.—Is about 300 yards north of the railroad section house at *Hartville Junction, Laramie County, Wyo.*, 4 paces south of the third telegraph pole south of a mile pole No. 119, 11 steps west of the track. (See note 11, p. 581.) This stone was broken in shipping and the letters B. M. were destroyed, but the bench mark was not injured.

N₁.—Is at *Wendover, Laramie County, Wyo.*, on the Colorado and Southern Railroad, in the northeast stone pier of the water tank. (See note 3, p. 580.)

O₁.—Is at the railroad siding called *Cassa, Laramie County, Wyo.*, about 40 feet east of the track, 10 feet south of the first telegraph pole north of mile pole No. 131, on a post set 4 feet in the ground. (See note 11, p. 581.)

P₁.—Is a half mile south of *Glendo, Laramie County, Wyo.*, on a small deck girder bridge (Colorado and Southern Railroad bridge No. 185), in the top of the north abutment, about 10 feet to the west of the west rail and about 5 feet below the top of the rail, 8 inches from the inner edge of the abutment, and 12 inches from the retaining wall at the end of the bridge. (See note 3, p. 580.)

Q₁.—Is a mile south of *Bona, Laramie County, Wyo.*, about 25 feet east of the railroad track, between the third and fourth telegraph poles south of mile pole 147, about 10 feet north of the fourth pole, on a $4\frac{1}{2}$ -foot sandstone post projecting 6 inches from the ground. (See note 5, p. 580.)

R₁.—Is 0.8 mile southeast of *Orin Junction, Converse County, Wyo.*, on the right of way of the Colorado and Southern Railroad, 6 feet from telegraph mile pole No. 153 and 15 feet east of the center of the track, on a post set with 6 inches projecting from the ground. (See note 11, p. 581.)

S₁.—Is at *Orin Junction, Converse County, Wyo.*, in the southwest stone pier of the water tank, on the side toward the Colorado and Southern track. (See note 3, p. 580.)

T₁.—Is about a half mile east of *Orin Junction, Converse County, Wyo.*, on the Fremont, Elkhorn and Missouri Valley Railroad, on a small red sandstone arched culvert on the south side of the track, on the top stone of the west wall, about 11 feet from the center of the track. (See note 3, p. 580.)

DESCRIPTIONS OF PERMANENT BENCH MARKS FROM ROCK CREEK TO RED DESERT,
WYOMING.

V.—Is at *Rock Creek, Albany County, Wyo.* (See App. 8, Report for 1899, p. 647.) Reported in good condition in 1902.

W.—Is at *Rock Creek, Albany County, Wyo.* (See App. 8, Report for 1899, p. 647.) Reported in 1902 as in fair condition, but having settled.

U.—Is at *Rock Creek, Albany County, Wyo.* (See App. 8, Report for 1899, p. 647.) It was reported in 1902 that the bench mark was apparently undisturbed, although the bridge corresponding to the abutment upon which it is located had been removed. The abutment seemed to be in a fair state of preservation at that time, but no doubt in a few years would be undermined by the river. The Union Pacific Railroad in the vicinity of Rock Creek has been changed to a new route, so that the bench mark is now about seven miles from the railroad.

C₃.—Is about 2 miles west of *Wilcox, Albany County, Wyo.*, on the south side of the track, on a small stone culvert under the Union Pacific Railroad, on the east wing 8 inches from the end of the cap stone. (See note 3, p. 580.)

D₂.—Is about 2 miles west of *Aurora, Carbon County, Wyo.*, and 1½ miles east of *Ridge, Carbon County, Wyo.*, on the right of way of the Union Pacific Railroad, opposite the grade point of the west end of the second long fill east of Ridge, opposite a telegraph pole, 40 feet north of the track and 10 feet south of the wire fence. (See note 34, p. 583.)

E₂.—Is at *Medicine Bow, Carbon County, Wyo.*, about 50 yards east of the depot, on the southeast corner of the stone foundation under the most eastern one of the two northern iron columns supporting the railroad water tank. (See note 3, p. 580.)

F₂.—Is at *Medicine Bow, Carbon County, Wyo.*, at a point 24 rails west of the station semaphore, opposite the fifth telegraph pole west of the station, 48 feet south of this pole and 171 feet south of the main track. (See note 34, p. 583.)

G₂.—Is at *Allen, Carbon County, Wyo.*, on the right of way of the Union Pacific Railroad, 90 feet north of the center of the main track and 6 feet south of the wire fence, at a point 10 rails west of the station sign, and 63 feet west of the west side of the section house. (See note 34, p. 583.)

H₂.—Is about 2½ miles west of *Como, Carbon County, Wyo.*, on the right of way of the Union Pacific Railroad, 36 feet south of the track and 4 feet north of the wire fence, 8½ rails west of a small culvert, which is the only one in the vicinity, and about 150 yards west of a small cut, which is the only cut for several miles west of Como. (See note 34, p. 583.)

I₂.—Is at *Hanna, Carbon County, Wyo.*, 425 meters east of the water tank on the right of way of the Union Pacific Railroad, 90 feet north of the center of the main track, in line with the telegraph poles, about halfway below the first and second telegraph poles east of an angle in the line of telegraph poles. (See note 34, p. 583.)

J₂.—Is at *Hanna, Carbon County, Wyo.*, about 800 feet west of the station, 20 feet north of the track, eastern one of the two northern piers which formerly supported the water tank, in the southeast corner of the pier. (See note 3, p. 580.)

K₂.—Is at *Dana, Carbon County, Wyo.*, on the right of way of the Union Pacific Railroad, 39 feet from the center of the main track at a point $1\frac{1}{2}$ rails east of the east end of the depot. (See note 34, p. 583.)

L₂.—Is at *Edson, Carbon County, Wyo.* (old station), on the right of way of the Union Pacific Railroad, 84 feet north of the center of the main track, and 16 feet south of the wire fence, 14 rails east of the most western switch stand, 23 rails west of the section house, and 26 rails west of the station sign. (See note 34, p. 583.)

M₂.—Is three-fourths mile west of *Walcott, Carbon County, Wyo.*, on the south side of the track near the center of the capstone of the stone facing of a drain pipe. (See note 3, p. 580.)

N₂.—Is at *Fort Steele, Carbon County, Wyo.*, and is the bottom of a square cut on the southeast corner of the stone foundation under the most eastern one of the two southern iron columns supporting the railroad water tank west of the station.

The letters U. S. B. M. are cut on the east face of the foundation just under the bench mark.

Geol. Survey West Base \triangle .—Is a station of the Geological Survey and is located about three-fourths mile east of *Greenville, Carbon County, Wyo.*, about 100 yards south of Union Pacific Railroad track. It is marked by a bronze plate in the top of stone post set into the ground. The top of the stone is nearly flush with the ground, the exposed face being about 6 inches by 10 inches. Iron pipes are set on the north, south, and east sides for reference marks, and at present there is a quadrapod signal erected over the station. The center of the triangle in the bronze plate is the point where elevation was determined. This is not considered as a permanent bench mark, as the mark is too unstable to be reliable.

O₂.—Is about one-half mile east of *Greenville, Carbon County, Wyo.*, on the south side of the track, near west end of the capstone of a small culvert, the only stone one in this vicinity, and consists of a square lettered U S \square B M.

P₂.—Is at *Rawlins, Carbon County, Wyo.*, on the stone sill of the northeast window of the roundhouse and is the bottom of a square lettered thus: U S \square B M.

Q₂.—Is at *Rawlins, Carbon County, Wyo.*, on the stone sill of a one-story stone building on the northwest corner of Fourth and Cedar streets and is 2 feet from southwest corner of the sill and 8 inches above the sidewalk. (See note 3, p. 580.)

R₂.—Is at *Rawlins, Carbon County, Wyo.*, on the county court-house, in one of the corner stones on the west side, 11 inches from the southwest corner and 5 feet above the ground. (See note 13, p. 581.)

S₂.—Is at *Solon, Carbon County, Wyo.*, 96 feet west of the depot platform, 48 feet south of the center of the main track, 12 feet south of the fence, 2 rails east of east switch stand for the south siding, and between the third and fourth telegraph poles east of the new section house. The depot is soon to be moved about 100 yards west and to the opposite (north) side of the track (1902). (See note 34, p. 583.)

T₂.—Is 1 mile east of *Daleys Ranch, Carbon County, Wyo.*, and is on the south side of the track, on the east abutment of a small deck-plate girder, 1 foot from the end of the abutment. (See note 3, p. 580.)

U₂.—Is at *Riner, Sweetwater County, Wyo.*, 40 feet south of the center of the main track, 5 feet north of wire fence, $20\frac{1}{2}$ rails west of the west end of the depot, $11\frac{1}{2}$ rails

west of the west water tank, and $1\frac{1}{2}$ rails east of the west switch stand, just east of a cut. (See note 34, p. 583.)

V₂.—Is at *Fillmore, Sweetwater County, Wyo.*, on the right of way of the Union Pacific Railroad, at the west end of a small cut, 3 rails east of the station sign and about 9 rails west of the first switch stand east of the station sign, 43 feet south of the center of the main track and 7 feet north of the railroad fence, in line with telegraph poles. (See note 34, p. 583.)

W₂.—Is at *Creston, Sweetwater County, Wyo.*, 6 rails west of the west end of the depot, 46 feet south of the center of the main track and 4 feet north of the railroad fence, 6 feet south of the line of telegraph poles and directly behind a sign marked "Divide of the Continent. Elevation 7014 ft." (See note 34, p. 583.)

X₂.—Is about one-half mile west of *Latham, Sweetwater County, Wyo.*, on the top of the stone facing of a drainpipe, on the south side of the track, on the east wing wall, 8 inches from the southeast corner of the capstone. The drainpipe is 10 rails east of a semaphore and is the only one in the vicinity. (See note 3, p. 580.)

Y₂.—Is at *Wamsutter, Sweetwater County, Wyo.*, on the northeastern corner of the stone foundation of the railroad water tank under the more southern of the two eastern columns. The letters U. S. B. M. are cut on the east face of the stone just under the bench mark.

Z₂.—Is 1 mile east of *Red Desert, Sweetwater County, Wyo.*, on the right of way of the Union Pacific Railroad, about $4\frac{1}{2}$ rails east of the beginning of the first curve east of the station and $15\frac{1}{2}$ rails west of the station whistle post; 38 feet south of the track and 8 feet north of the fence. (See note 34, p. 583.)

A₂.—Is about one-half mile east of *Red Desert, Sweetwater County, Wyo.*, on the east abutment of a through plate girder, a few inches from the south end on a stone projecting from under the retaining wall. (See note 3, p. 580.)

B₂.—Is at *Red Desert, Sweetwater County, Wyo.*, 45 feet west of the prolongation of the west wall of the depot, 213 feet north of the main track, 135 feet north of the fence. (See note 34, p. 583.)

DESCRIPTIONS OF BENCH MARKS, WASHINGTON, D. C.

N. 8, or E.—*Washington, D. C.* The center of a rude cross and circle ⊕ cut into the top of one of the coping stones of the wharf or dock on the east side of the slip to the boathouse, navy-yard. It is 28 feet 9 inches south from the boathouse, and 10 inches from outer edge of stone.

N. 14, or Ordnance.—*Washington, D. C.* The bottom of a square hole, about 0.15 inch or 0.0125 foot deep, cut into the north end of the granite doorstep of the main entrance to the Ordnance Office, navy-yard. It was marked thus:

U S
C & ■ G S
B M

The step is about 8 feet long, 14 inches wide by 8 inches thick, and is set on 3 feet of concrete.

No. 16 or 24.—*Washington, D. C.* The southeast corner of foundation at entrance on Eighth street, near the southeast corner of the Capital Traction Company's building, corner of Eighth and M streets SE.

No. 22.—*Washington, D. C.* The center of a rude cross in middle of stone door-sill of M street entrance to Bruen Mission Church, on corner of M and Half streets SE.

No. 25.—*Washington, D. C.* The center of a rude circle cut into the stone abutment on southwest corner of M Street Bridge at First street SW.

No. 30.—*Washington, D. C.* A rude cross cut in the southwest corner of the top surface of the stone doorsill of Faith Chapel, on M street, between Four-and-a-half and Sixth streets SW.

No. 36 or Arsenal.—*Washington, D. C.* The northwest corner of iron plate on stone foundation of the west post of the central or carriage gate to the old Arsenal Grounds.

No. 41.—*Washington, D. C.* A rude cross cut on the upper surface of the corner of foundation stone on west side of western entrance to the Seventh street power house from P street SW.

No. 47 or Brewery.—*Washington, D. C.* The north corner of the northern window sill of the brewery on the corner of Delaware avenue and E street SW.

No. 79. *Washington, D. C.* A rude cross cut in the south corner of the south doorsill of St. Paul's African Methodist Episcopal Church on Eighth street SW.

No. 80.—*Washington, D. C.* A rude cross cut into the south end of the top stone of the south doorstep of Kendall Green Baptist Church on Ninth street, between B and C streets SW.

No. 82.—*Washington, D. C.* A rude cross cut into the west side of the stone sill of the outer door of the main northern entrance to the National Museum.

No. 84, or Smithsonian.—*Washington, D. C.* A cross cut in the stone coping of the area wall in front of the basement window at the northeast corner of the Smithsonian Institution.

No. 88.—*Washington, D. C.* Is about 3 feet below the surface of the ground, in the southeast corner of the Washington Monument Grounds, near the Bureau of Engraving and Printing, 25 feet east of the board walk, 150 feet from the fence, about 20 feet northeast of a large elm tree (near bridle path), and about 120 feet from the intersection of the bridle path and roadway. It consists of a brass plug set into a stone which rests on concrete, with an iron tube covered by a rough, flat stone on the surface. It was established by the United States Engineers.

No. 92.—*Washington, D. C.* The top surface of an underground obelisk covered with an iron plate, about 34 meters south of Washington Monument, a few feet outside of the driveway. It was established by the United States Engineers.

No. 93.—*Washington, D. C.* The top surface of an iron plate, about 2 inches below the surface of granolithic pavement at the southwest corner of Washington Monument.

No. 95.—*Washington, D. C.* The top of brass cap over iron rod just outside granolithic pavement at southwest corner of Washington Monument.

No. 96.—*Washington, D. C.* The top of brass cap over iron rod just outside granolithic pavement at southeast corner of Washington Monument.

No. 97.—*Washington, D. C.* The top of brass cap over iron rod just outside granolithic pavement at northeast corner of Washington Monument.

No. 98.—*Washington, D. C.* The top of brass cap over iron rod just outside granolithic pavement at northwest corner of Washington Monument.

No. 101.—*Washington, D. C.* The east corner of the doorsill of the office of Heurich Brewery, on C street, between Twenty-fifth and Twenty-sixth streets NW. No mark was made to indicate the point used, but the rod was held against the bricks on the outer right-hand corner of the sill upon entering the door.

No. 102.—*Washington, D. C.* Is the outer west corner of the doorsill of the south entrance to Washington Gas Company's Office, on the northeast corner of Twenty-sixth and G streets NW. No mark was made to indicate the point used, but the rod was held against the left-hand side of the door upon entering it.

No. 103.—*Washington, D. C.* A rude cross cut in the sea wall about 2 feet north of Engineer's Wharf at Easby Point.

DESCRIPTION OF BENCH MARKS, FORT HAMILTON, N. Y.

A.—Is at the intersection of a cross + about 6 inches long cut in the level surface of the cap stone on the western side of the stone pier belonging to the Government at *Fort Hamilton, N. Y.* The cross is about 7 feet from the southwest corner of the wharf.

C.—Is at *Fort Hamilton, N. Y.*, and is the top of a cannon ball forming part of an iron mooring post near the southeast corner of the stone pier and about 3.75 feet above the wharf at *Fort Hamilton, N. Y.*

D.—Is at *Fort Hamilton, N. Y.*, and is the highest point within the 3-inch circle cut in the cap stone of the wharf about 12 feet north of B. M. C. It is level with the top of the wharf.

F.—Is the highest portion of a notch about an inch deep and 4 inches long cut in face of the sea wall about 113 feet south of the shore end of the stone pier at *Fort Hamilton, N. Y.* It is about 4.33 feet below the top of the cap stone, measured along the slope, and nearly 4 feet south of a drain.

G.—Is the highest point within the 3-inch circle cut in cap stone of sea wall about 75 feet south of B. M. F. at *Fort Hamilton, N. Y.* An arrowhead was also cut in the stone to point out the mark.

H.—Is the highest point of a notch cut in the vertical face of a stone in the retaining wall on west side of *Fort Hamilton, N. Y.*, nearly in line with the medial line of the stone pier, and about 6 feet south of a drain. The notch is an inch and a half deep and 4 inches long.

CORRECTIONS TO DESCRIPTIONS AND ELEVATIONS OF BENCH MARKS PUBLISHED IN APPENDIX 8, REPORT FOR 1899.

The following bench marks, of which the descriptions are printed on pages 565-567, were reported in 1901 by Mr. Walter M. Dawley as having been destroyed: LXV, at *Delhi, Ohio*; LXVI, near *Lawrenceburg, Ind.*; LXVII, near *Cochran, Ind.*; LXVIII, near *Delaware, Ind.*; LXIX, near *North Vernon, Ind.*; V, near *Medora, Ind.*; LXX, near *Fort Ritner, Ind.*; W, near *Scottsville, Ind.*; III, near *Clay City, Ill.*; IV, near *Iuka, Ill.*; E₂, near *Carlisle, Ill.*; VIII, near *Aviston, Ill.*; and IX near *Caseyville, Ill.*

Page 567. *Collins* station, Illinois, in description of bench mark VII, is now known as *Huey*.

Page 592. It was reported in April, 1902, in regard to bench mark C₁ at *Scranton, Miss.*, that the shank of the copper bolt remains imbedded in the brickwork. Its head

has been chiseled off flush with the face of the building. The bolt is covered with a thin film of cement, but it can readily be located by measuring along the tenth course of bricks above the water table 0.33 meter (1.09 feet) from the northeast corner of the building.

Page 635. It has been reported that the house upon which the bench mark Archer, at *Archer, Fla.*, was placed has been burned down and the bench mark has disappeared.

Page 645. The building at *Cheyenne, Wyo.*, upon which bench mark C was placed is reported in 1901 to be known as "The Paint Shop."

Page 647. Bench mark X₂ at *Solomon, Kans.*, was reported in 1900 as having been destroyed.

Page 670. P. B. M. 45, opposite *Shreveport, La.*, which is said to be the same as the triangulation station West Base of the Shreveport Base Line, was reported in 1902 to be a wooden post 6 inches square, of which the top is rotten. The post is also reported to be loose in the ground, and of no value as a permanent bench mark.

Page 707. It was reported in 1901 that old B. M. U. S. at *Decatur, Ala.*, has been disturbed in its elevation by a change in the bridge-seat stone.

Page 707. It was reported in 1901 that P. B. M. 48 at *Decatur, Ala.*, is probably lost, as the bolt could not be found, but the hole supposed to have been left by the bolt was found.

Page 707. It was reported in 1901 that the elevation of P. B. M. 49 at *Decatur, Ala.*, had been disturbed.

Page 710. The description of T. B. M. 63 should have been inserted after T. B. M. 60, near the bottom of the page, as follows: "T. B. M. 63.—Is three-quarters of a mile below *Olmstead, Ala.*, at the west end of upper solid rock cut on north side, being highest point in square."

Page 725. It was reported in 1901 that P. B. M. 17, near *Hannibal, Mo.*, had been destroyed.

Page 737. It was reported by Mr. C. H. Judson, in April, 1901, that the description of P. B. M. 99 is erroneous, and should be corrected as follows: "The bolt is now leaded horizontally into the masonry about 2 feet above its original location, or about 1 foot above the wooden platform which has been erected level with floor of freight house. It is directly above its original location." The elevation given is correct for the present bench mark.

Page 850. The description of B. M. 35 (1875) should be as follows: "B. M. 35 (1875).—On projecting point of stone in second course of stones on southeast wing of northeast abutment of bridge above *Lock No. 34, Erie Canal.*"

Page 851. The description of B. M. 38 (1875) should read as follows: "B. M. 38 (1875).—Top of coping at corner of east wing of north abutment of bridge above *Lock No. 37 (or 39), Erie Canal.*"

Page 399, the reference opposite line No. 26. The pages should be 385–388, 392.

Page 401, line No. 122, in the column "Difference of Elevation." The entry should be –19.0180 instead of that printed with the plus sign.

Page 409, in the last column but one in the table, on the third line from the top, the sign should be minus before the quantity 1.1314.

Page 422, the first paragraph on the page is erroneous to the following extent. The entire line, Cape Vincent–Hogansburg, was run by Mr. D. A. Molitor, using the Menden-

hall level and the method of observation described in Transactions of American Society of Civil Engineers (Vol. XLV, June 1901, pp. 1-114).

Also, Mr. Molitor ran the portion of the line Gibraltar-Fort Gratiot between Grosse Point and New Baltimore, using this instrument and method.

Pages 478 and 479. The elevation of bench marks commencing with C near *Pike View, Colo.*, are erroneous as printed by a variable amount, on account of an error in computation. The heights of these bench marks should have been printed as follows:

Designation of bench mark.	Corrected elevation.	Designation of bench mark.	Corrected elevation.
	<i>Meters.</i>		<i>Meters.</i>
C ₁	1 895. 1080	O ₁	1 780. 2932
D ₁	1 947. 4074	P ₁	1 711. 2419
E ₁	1 986. 6796	Q ₁	1 677. 9180
F ₁	2 007. 4176	R ₁	1 648. 0053
G ₁	2 121. 4802	S ₁	1 634. 8162
H ₁	2 202. 5511	T ₁	1 610. 1124
I ₁	2 154. 3721	U ₁	1 609. 2481
J ₁	2 101. 2234	V ₁	1 609. 0009
K ₁	2 035. 9068	W ₁	1 609. 2967
L ₁	1 923. 4930	X ₁	1 581. 3582
M ₁	1 890. 8193	Y ₁	1 580. 7400
N ₁	1 833. 0750		

These elevations are superseded by those printed on p. 462 of this Report.

Page 496. P. R. P. Glendora should be stated to be near *Glendora, La.*, instead of near Pace Lake.

Page 501. The elevation of P. B. M. 1, *Birmingham, Ala.*, should have been printed as 186.0369 instead of 180.0369.

Page 513. T. B. M. 227 should be stated to be at *North McGregor, Iowa*, instead of McGregor, Iowa.

Page 515. P. B. M. 315 and P. B. M. 316 should be stated to be near *Bellevue, Iowa*, instead of near Goldens, Iowa.

Page 546. P. R. R. 169 should be stated to be near *Ryde, Pa.*, instead of at Overhead Bridge, Pa.

Page 555. L at *Fort Hamilton, N. Y.*, was destroyed October, 1901.

Page 868. P. R. R. 5 should be described as at *Rockville, Pa.*, and P. R. R. 6 as near *Rockville, Pa.*

Page 627. No. XI.—*West Washington (Georgetown), D. C.* This bench mark is on the west wing of the abutment at the north end of the bridge and south of the canal, and is on a projection extending along the face of the abutment about 7 feet below the top on fourth stone from the end.

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